ORDER NO. AD8804026C2

Service Manual

Tuner
ST-G70L

QUARTZ Synthesizer
LW/MW/FM Stereo Tuner

Color

(K)...Black Type
(S)...Silver Type

Area

Color	Area
(K) (S)	(EK).......United Kingdom.
(K) (S)	(EB).......Belgium.
(K) (S)	(EF).......France.
(K) (S)	(EW)......Switzerland.

SPECIFICATIONS

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50～108.00 MHz 87.525～108.00 MHz (+25 kHz shift)
Sensitivity	1.5µV (IHF, usable)
S/N 30 dB	1.3µV (75Ω)
S/N 26 dB	1.2µV (75Ω)
S/N 20 dB	0.9µV (75Ω)
IHF 46 dB stereo quieting sensitivity	28µV/75Ω
Total harmonic distortion	
MONO (normal)	0.015%
STEREO (normal)	0.02%
S/N	
MONO	72 dB (80 dB, IHF)
STEREO	66 dB (73 dB, IHF)
Frequency response	4 Hz～18 kHz, +0.5 dB～−1.5 dB
Alternate channel selectivity	
normal ±400 kHz	55 dB
super narrow ±200 kHz	30 dB
Capture radio	1.0 dB
Image rejection at 98 MHz	130 dB
IF rejection at 98 MHz	130 dB
Spurious response rejection at 98 MHz	130 dB
AM suppression	55 dB
Stereo separation	
1 kHz	60 dB
10 kHz	45 dB
Carrier leak	
19 kHz	−55 dB (−60 dB, IHF)
38 kHz	−40 dB (−45 dB, IHF)
Channel balance (250 Hz～6,300 Hz)	±1.0 dB
Limiting point	0.85µV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	
MW	522 kHz～1611 kHz (9 kHz-steps) 530 kHz～1620 kHz (10 kHz-steps)
LW	155 kHz～353 kHz (9 kHz-steps) 153 kHz～351 kHz (−2 kHz shift)
Sensitivity (S/N 20 dB)	
MW	20µV, 300µV/m
LW	50µV
Selectivity (±9 kHz)	
MW (at 999 kHz)	50 dB
LW (at 254 kHz)	50 dB

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

Image rejection	
MW (at 999kHz)	40dB
LW (at 254kHz)	40dB
IF rejection	
MW (at 999kHz)	60dB
LW (at 254kHz)	35dB

■ GENERAL

Output voltage	0.3V (0.6V IHF)
Power consumption	9.5W
Power supply	
For United Kingdom	AC 50Hz/60Hz, 240V
For continental Europe	AC 50Hz/60Hz, 220V
Dimensions (W × H × D)	430 × 93.5 × 288mm (16-30/32″ × 3-22/32″ × 11-11/32″)
Weight	3.5kg (7.7 lb.)

Notes:

1. Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).
2. Specifications are subject to change without notice. Weight and dimensions are approximate.

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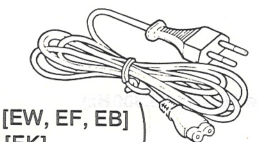
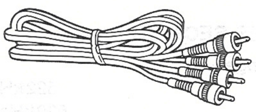
■ ACCESSORIES

- AC power supply cord 1

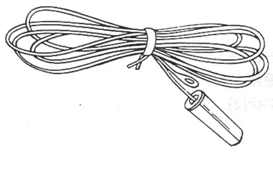


(SFDAC05E03 [EW, EF, EB]
SFDAC05G02 [EK])

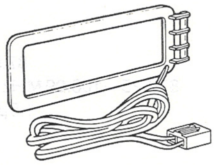
- Stereo connection cable 1
(SJP2249-1)



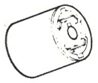
- FM indoor antenna 1
(SSA270M)



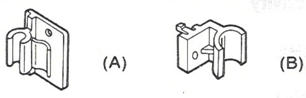
- AM loop antenna 1
(SPB1152T)



- Attachment plug 1
(For United Kingdom only)
(SJP9009)



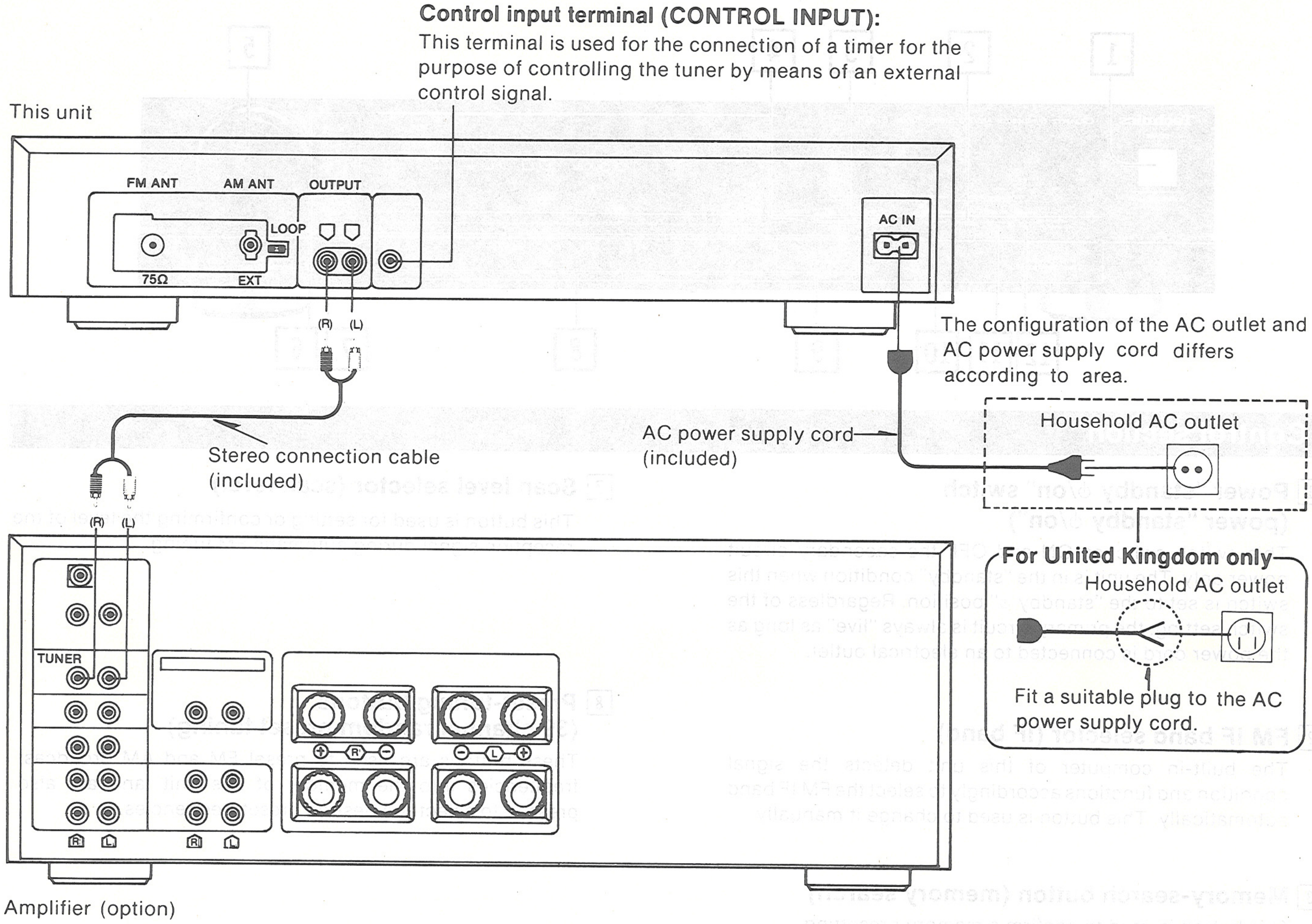
- AM antenna holders 2
(SMA233-1M) (SMA231M)



- Screws 2
(XTN3+10AFZ)

D

CONNECTIONS


This unit
FM ANT
AM ANT
OUTPUT
LOOP
75Ω
EXT
AC IN
(R)
(L)
TUNER
Amplifier (option)

Control input terminal (CONTROL INPUT):
This terminal is used for the connection of a timer for the purpose of controlling the tuner by means of an external control signal.

Stereo connection cable (included)

AC power supply cord (included)

The configuration of the AC outlet and AC power supply cord differs according to area.

Household AC outlet

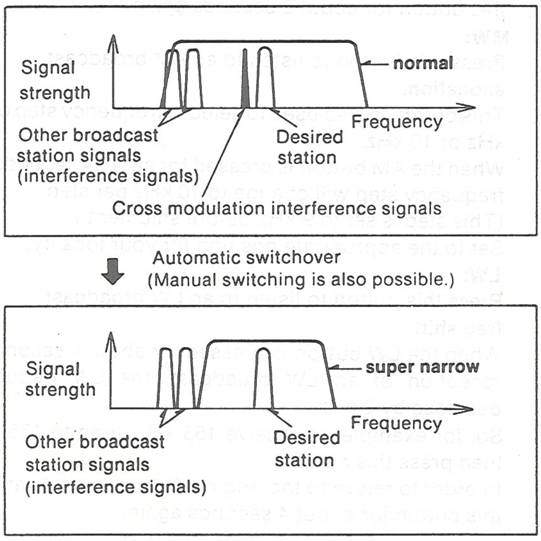
For United Kingdom only
Household AC outlet

Fit a suitable plug to the AC power supply cord.

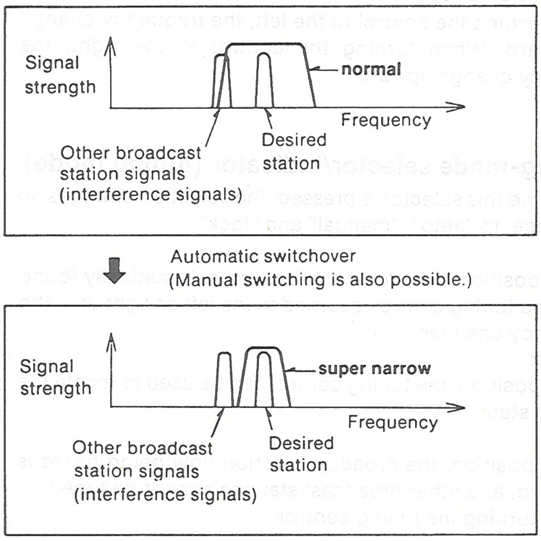
FM AUTOMATIC RF/AUTOMATIC IF

In order to improve tone quality during reception of FM broadcasts when the FM band is crowded with many FM broadcast stations, this model includes "normal" circuitry and "super narrow" circuitry both for the RF (radio frequency) stage and for the IF (intermediate frequency) stage. This special circuitry functions to detect interference signals when several conflicting signals are being received, and to automatically select the optimum reception conditions. (There is an automatic switchover to the "super narrow" circuitry when interference signals are present, and to the "normal" circuitry when they are not a problem.)
The "super narrow" circuitry of the RF stage eliminates interference signals caused as the result of two or more strong broadcast station signals. The "super narrow" circuitry of the IF stage eliminates interference signals caused by broadcast station signals on adjacent frequencies.

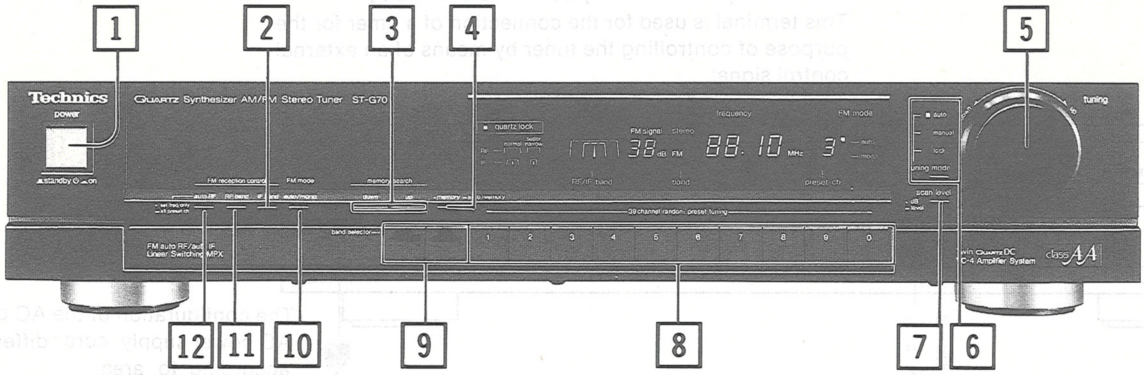
FM RF-band automatic-selector (auto RF)


Signal strength
normal
Frequency
Other broadcast station signals (interference signals)
Desired station
Cross modulation interference signals
Automatic switchover
(Manual switching is also possible.)
Signal strength
super narrow
Frequency
Other broadcast station signals (interference signals)
Desired station

FM IF-band selector (IF band)


Signal strength
normal
Frequency
Other broadcast station signals (interference signals)
Desired station
Automatic switchover
(Manual switching is also possible.)
Signal strength
super narrow
Frequency
Other broadcast station signals (interference signals)
Desired station

FRONT PANEL CONTROLS AND FUNCTIONS


1
2
3
4
5
Technics
power
standby ⏻ on
QUARTZ Synthesizer AM/FM Stereo Tuner ST-G70
FM reception control
FM mode
auto RF
RF band
IF band
auto/mono
set freq only
all preset ch
memory search
down
up
memory
auto memory
quartz lock
FM signal
stereo
frequency
FM mode
88.10 MHz
RF/IF band
band
preset ch
39 channel random preset tuning
auto
manual
lock
tuning mode
scan level
dB
level
tuning
band selector
1
2
3
4
5
6
7
8
9
0
FM auto RF/auto IF
Linear Switching MPX
Twin QUARTZ DC
C-4 Amplifier System
class AA
12
11
10
9
8
7
6

Control section

1 Power "standby ⏻/on" switch (power "standby ⏻/on")

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the "standby ⏻" position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

2 FM IF band selector (IF band)

The built-in computer of this unit detects the signal condition and functions accordingly to select the FM IF band automatically. This button is used to change it manually.

3 Memory-search button (memory search)

This button is used to confirm a memory presetting.
If the button is pressed, the memorized frequency and "channel" number will be shown one after the other in order.

4 Memory button (memory)

This button is used when preset memory setting of the preset-tuning buttons is made.

5 Tuning control (tuning)

This control is used to select an FM or AM broadcast.
When turning the control to the left, the frequency change downward. When turning the control to the right, the fequency change upward.

6 Tuning-mode selector/indicator (tuning mode)

Each time this selector is pressed, the selection changes, in sequence, to "auto", "manual" and "lock".

auto:
At this position, broadcast stations are automatically found when the tuning control is turned to the left or right until the frequency changes.

manual:
At this position, the tuning control can be used to locate the desired station.

lock:
At this position, the broadcast station now being heard is locked in, and other broadcast stations cannot be tuned to, even if turning the tuning control.

7 Scan level selector (scan level)

This button is used for setting or confirming the level of the reception signal during automatic FM tuning.

8 Preset-tuning buttons (39 channel random preset tuning)

These buttons are used to preset FM and AM broadcast frequencies into the memory of this unit, and are also pressed to select the desired preset frequencies.

9 Band selectors (band selector)

FM:
Press this button to listen to an FM broadcast.

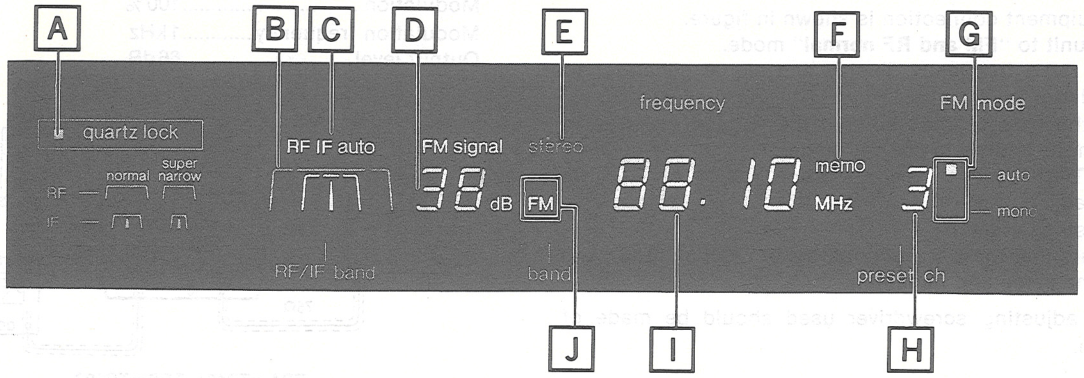
freq shift:
When the button is pressed slightly longer, the reception frequency increases by 0.025 MHz (25 kHz).
(The final figure of the frequency display changes to "2" or "7".)
In order to return to the original frequency indication, press this button for about 2 seconds again.

MW:
Press this button to listen to an AM broadcast.

allocation:
This button is also used to select a frequency step of either 9 kHz or 10 kHz.
When the AM button is pressed for about 4 seconds, the AM frequency step will change to 10 kHz per step.
(This step is set to 9 kHz before shipment.)
Set to the appropriate position for your locality.

LW:
Press this button to listen to an LW broadcast.

freq shift:
When the LW button is pressed for about 4 seconds during reception of an LW broadcast, the LW frequency will decrease by 2 kHz.
So, for example, to receive 153 kHz, tune to 155 kHz, and then press this button.
In order to return to the original frequency indication, press this button for about 4 seconds again.



10 FM mode selector (FM mode)

If noise is excessive in stereo broadcasts, a switchover to monaural reception can be made.
When there is a change to monaural reception, the illumination of the FM mode indicator changes to the "mono" position.

11 FM RF-band selector (RF band)

This button can be used to switch the RF bandwidth to either the "normal" width or the "super narrow" width by manual operation.

Interference signals are removed if switched to "super narrow".

12 FM RF-band automatic-selector (auto RF)

It sometimes happens, during the reception of FM broadcasts, that a station other than the desired station is received, or interference noise is excessive, even though there is no broadcast station other than the desired station on a nearby frequency.
The reason for this is that interference signals are produced in a frequency band in which there is actually no broadcast station when two or more strong broadcast stations' signals (interference signals) are input to the unit's "front end" (input stage). These interference signals are known as "cross modulation" interfernce signals, and they cause interference noise to be heard in the signals from the desired broadcast station.
This model is designed to eliminate such cross modulation interference signals by automatically switching the band-width of the RF (radio frequency; high frequency) band to the "super narrow" bandwidth.

- set freq only:
By lightly tapping this selector, the presence or not of interference signals within the broadcast signals being received is detected, and there is an automatic switchover to either the "normal" or "super narrow" circuitry as appropriate.

- all preset ch:
If this selector is pressed and held for a slightly longer time, the presence or not of interference signals within the broadcast signals of all FM broadcast stations that have been preset to the unit's memory is detected. There is then an automatic switchover to either the "normal" or "super narrow" circuitry as appropriate, and then an entry is automatically made (to the memory for these same "channels") of the "normal" or "super narrow" reception condition.

Display section

A Quartz-lock indicator (quartz lock)

This indicator illuminates when tuned precisely to an FM or AM station.

B FM RF/IF band indicator (RF/IF band)

These indicators show the FM reception conditions.

C FM RF/IF automatic-select indicator (RF IF auto)

This indicator illuminates when the FM RF-band automatic-selector is pressed.

D FM signal-strength display (FM signal)

This display usually shows the reception level of FM broadcasts (maximum 86 dB); when the scan-level selector is pressed and held, the station-tuning level is displayed in the sequence 30 → 40 → 50.

E FM stereo indicator (stereo)

This indicator automatically illuminates when an FM stereo broadcast is being received.
It will not illuminate if the FM mode selector is set to the monaural mode.

F Memory indicator (memo)

This indicator illuminates when the memory button is pressed.

G FM mode indicator (FM mode)

When FM broadcasts are being received, usually the "auto" indication is illuminated. When the FM mode selector is used to select monaural reception, the illumination of the FM mode indicator changes to the "mono" position.

H Channel display (preset ch)

The channel number selected by the preset-tuning buttons is displayed.

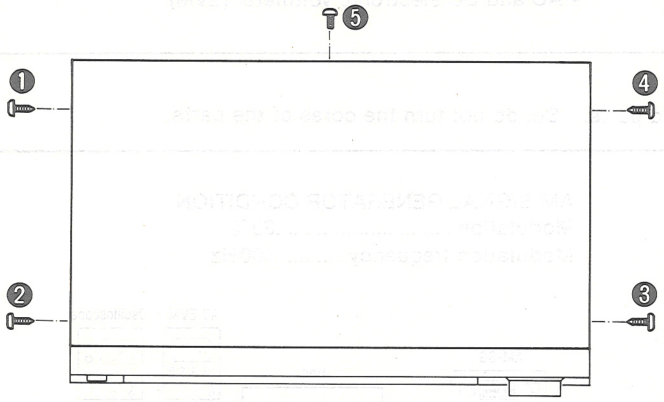
I Digital frequency display

The reception frequency of the FM or AM broadcast selected by using the tuning control or the preset-tuning buttons is indicated.

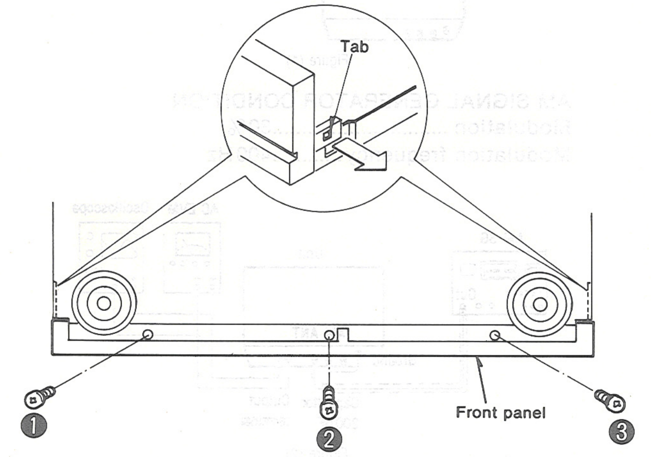
J Band indicator (band)

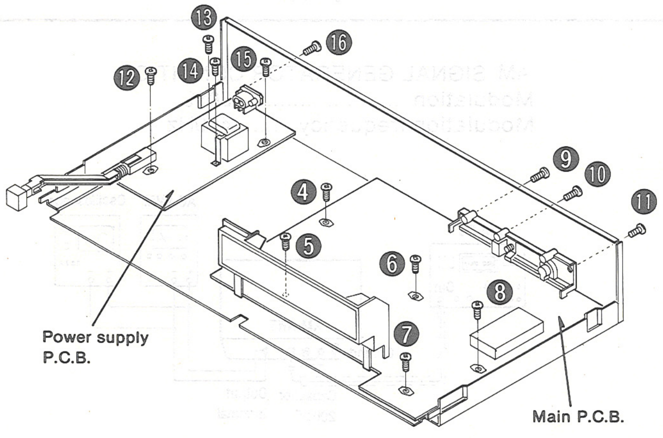
DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet
Procedure 1	• Remove the 5 screws (①~⑤).



Ref. No. 2	How to remove the main P.C.B. and power supply P.C.B.
Procedure 1 → 2	(1) How to remove the main P.C.B. • Remove the 3 screws (①~③). • Remove the 2 tabs and the front panel. • Remove the 8 screws (④~⑪). (2) How to remove the power supply P.C.B. • Remove the 5 screws (⑫~⑯).



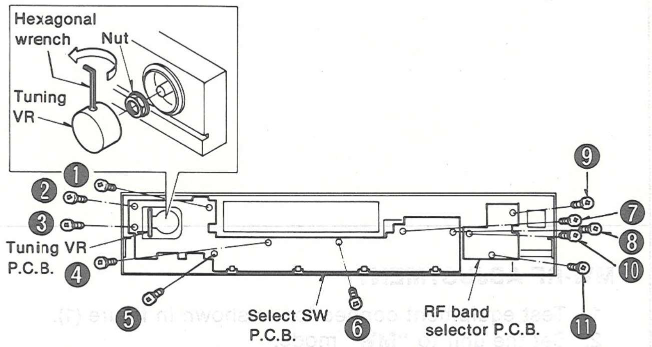


Ref. No. 3	How to remove the LED/operation SW P.C.B., RF band selector P.C.B. and tuning VR P.C.B.
Procedure 1 → 2 → 3	

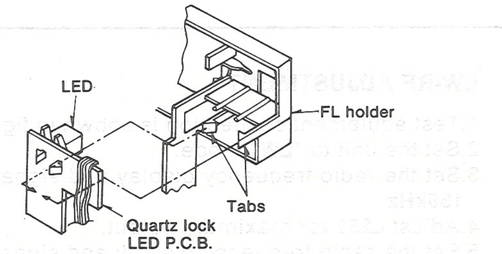
(1) How to remove the LED/operation SW P.C.B.
- Remove the 8 screws (①~⑧).

(2) How to remove the RF band selector P.C.B.
- Remove the 3 screws (⑨~⑪).

(3) How to remove the tuning VR P.C.B.
- Remove the tuning VR with hexagonal wrench.
- Remove the nut.



Ref. No. 4	How to remove the quartz lock LED P.C.B.
Procedure 1 → 2 → 4	• Remove the 2 tabs.



MEASUREMENTS AND ADJUSTMENTS

LW/MW/FM

Control positions and equipment used

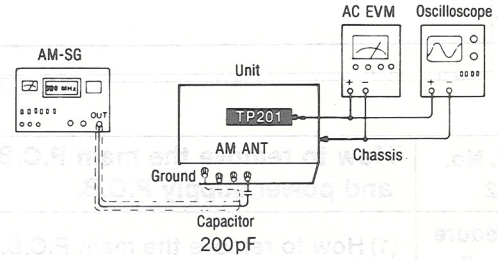
- AM and FM signal generator (AM and FM-SG)
- Stereo modulator
- Distortion analyser
- Oscilloscope
- Frequency counter
- Choke coil (100μH)
- Resistor (100kΩ)
- Ceramic capacitor (200pF)
- AC and DC electronic voltmeter (EVM)

Note: For **L251** (LW ANT coil), they are supplied as adjusted parts. So, do not turn the cores of the parts.

MW-IF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the to **"MW"** mode.
3. Set the radio frequency display and signal generator to **450kHz.**
4. Adjust **T201** for maximum output.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency...........400Hz


AC EVM
Oscilloscope
AM-SG
Unit
TP201
AM ANT
Chassis
Ground
Capacitor
200pF

MW-RF ADJUSTMENT

1. Test equipment connection is shown in figure (1).
2. Set the unit to **"MW"** mode.
3. Set the radio frequency display and signal generator to **522kHz.**
4. Adjust **L204** so that the voltage mesured in signal mode is **1.0V.**
5. Test equipment connection is shown in figure (2).
6. Set the radio frequency display and signal generator to **612kHz.**
7. Adjust **L203** for maximum output.
8. Set the radio frequency display and signal generator to **1503kHz.**
9. Adjust **CT201** for maximum output.
10. Repeat steps 6～9.

Note: Antenna input level must be as low as possible being free from AGC.

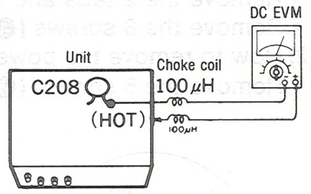

DC EVM
Unit
Choke coil
C208
100μH
(HOT)
100μH

Figure (1)

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency...........400Hz

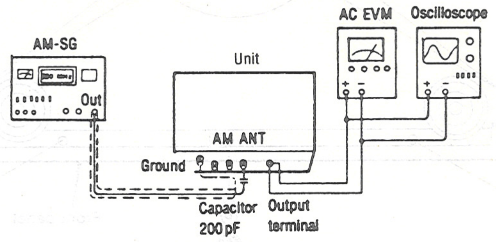

AC EVM
Oscilloscope
AM-SG
Out
Unit
AM ANT
Ground
Capacitor
200pF
Output
terminal

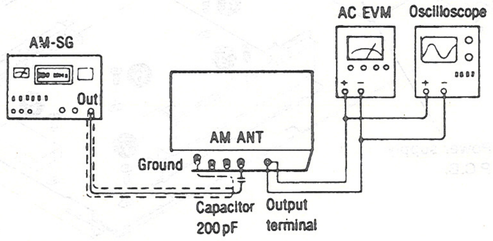
Figure (2)

LW-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to **"LW"** mode.
3. Set the radio frequency display and signal generator to **155kHz.**
4. Adjust **L252** for maximum output.
5. Set the radio frequency display and signal generator to **353kHz.**
6. Adjust **CT251** for maximum output.
7. Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency 400Hz

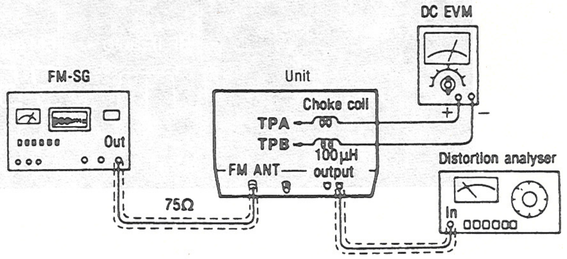

AC EVM
Oscilloscope
AM-SG
Out
AM ANT
Ground
Capacitor
200pF
Output
terminal

FM MONO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to **"FM and RF normal"** mode.
3. Set the radio frequency display and signal generator to **100.10MHz.**
4. Adjust the core of **T101** so that the voltage mesured in signal mode is **0mV** in 300mV range.
5. Adjust **T105** so that the distortion factor of L-CH is minimized.
6. Repeat steps 4 and 5.
7. Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency...........1kHz
Output level............................66dB

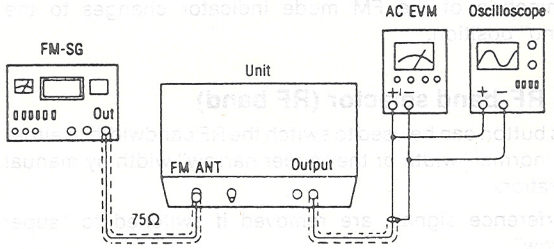

DC EVM
FM-SG
Out
Unit
Choke coil
TPA
TPB
100μH
FM ANT
output
75Ω
Distortion analyser
In

TPA=TP101, TPB=TP102

FM-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to **"FM and RF narrow"** mode.
3. Set the radio frequency display and signal generator to **90.1MHz.**
4. Adjust **L2** and **L4** for maximum output.
5. Set the radio frequency display and signal generator to **100.1MHz.**
6. Adjust **T1** for maximum output.
7. Adjust **T104** for maximum output.

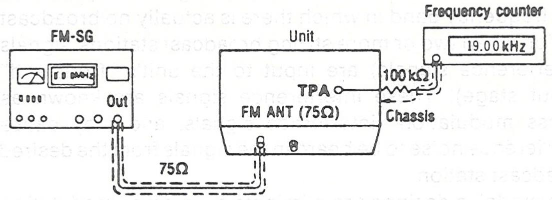
FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency...........1kHz


AC EVM
Oscilloscope
FM-SG
Out
Unit
FM ANT
Output
75Ω

MPX VCO ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to **"on/auto"** position.
3. Set the radio dial and signal generator to **100.10MHz.**
4. Adjust **VR302** for **19kHz±30Hz** on frequency counter reading.

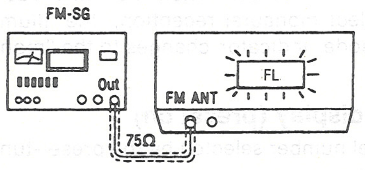
FM SIGNAL GENERATOR CONDITION
Modulation 0%
Modulation frequency..........0
Output level............................66dB

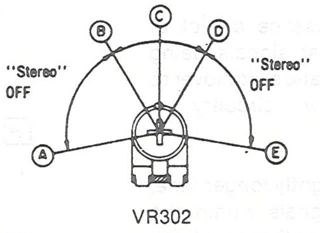

Frequency counter
19.00kHz
FM-SG
Out
Unit
100kΩ
TPA
Chassis
FM ANT (75Ω)
75Ω

TPA = TP301, Frequency counter:19.00 kHz

USING ALTERNATE SYSTEM

1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust **VR302** until stereo indicator lights up. Fix the arm of **VR302** as shown in figure.


FM-SG
Out
FL
FM ANT
75Ω


"Stereo"
OFF
"Stereo"
OFF
Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓔ
VR302

Ⓐ－Ⓑ,
Ⓓ－Ⓔ....... "Stereo" OFF position
Ⓑ－Ⓓ....... "Stereo" ON position (Indicator lighting)
Ⓒ.............. Adjust point of pilot circuit

FM STEREO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "**FM and normal**" mode.
3. Set the radio frequency display and signal generator to **100.10MHz.**
4. Adjust **T1** so that the distortion factor of L-CH is minimized.
5. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.
6. Set the unit to "**IF narrow**" mode.
7. Adjust **T104** so that the distortion factor of L-CH is minimized.
8. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.

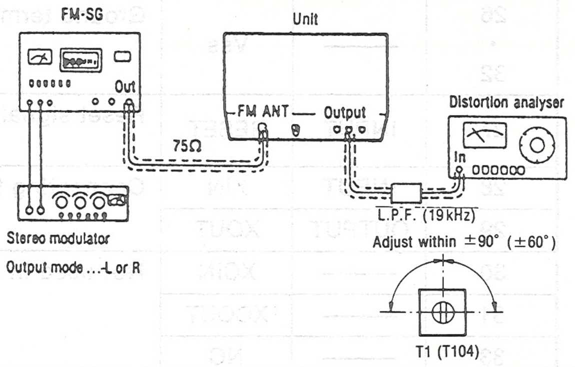
Note: 1. The adjusting screwdriver used should be made of resin.
2. **T1** should be rotated no more 1/4 turn (90 deg.) on either side.
3. **T104** should be rotated no more 1/6 turn (60 deg.) on either side.

FM SIGNAL GENERATOR CONDITION

Modulation ...."L" mode or "R" mode 45%, Pilot 10%

Modulation frequency............1kHz (Pilot 19kHz)

Output level...........................66dB


FM-SG
Out
Unit
FM ANT
Output
75Ω
Distortion analyser
In
L.P.F. (19kHz)
Stereo modulator
Output mode ...L or R
Adjust within ±90° (±60°)
T1 (T104)

SEPARATION ADJUSTMENT

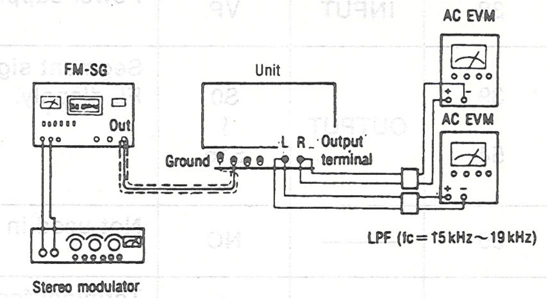
1. Test equipment connection is shown in figure.
2. Set the unit to "**FM and normal**" mode.
3. Set the radio frequency display and signal generator to **100.10MHz.**
4. Adjust **VR301** so that the R-CH output is minimized when stereo modulator is in "L" (L-CH modulation) mode.

FM SIGNAL GENERATOR CONDITION

Modulation ...."L" mode or "R" mode 45%, Pilot 10%

Modulation frequency............1kHz (Pilot 19kHz)

Output level...........................66dB


FM-SG
Out
Unit
Ground
L
R
Output terminal
AC EVM
AC EVM
LPF (fc=15kHz~19kHz)
Stereo modulator

FM SIGNAL STRENGTH LEVEL ADJUSTMENT

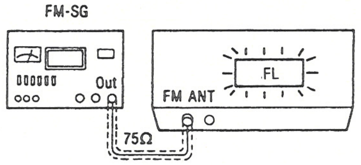
1. Test equipment connection is shown in figure.
2. Set the unit to "**FM and normal**" mode.
3. Set the radio frequency display and signal generator to **100.10MHz.**
4. Change LCD display from "frequency" to "dB" by pressing the FM signal button.
5. Adjust **VR103** so that **50dB** is indicated. "**50dB**" is indicated on the LCD display.
6. Adjust **VR102** so that **70dB** is indicated. "**70dB**" is indicated on the LCD display.
7. Adjust **VR101** so that **86dB** is indicated. "**86dB**" is indicated on the LCD display.
8. Repeat steps 5~7.

FM SIGNAL GENERATOR CONDITION

Modulation 30%

Modulation frequency...........1kHz

Output level...........................56, 76, 92dB


FM-SG
Out
FM ANT
FL
75Ω

FM IF NARROW GAIN ADJUSTMENT

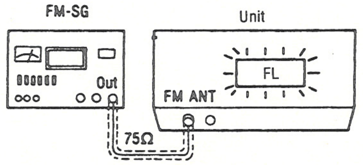
1. Test equipment connection is shown in figure.
2. Set the unit to "**FM and normal**" mode.
3. Change LCD display from "frequency" to "dB" by pressing the FM signal button.
4. Confirm that "dB" is indicated.
5. Set the unit to "**IF narrow**" mode.
6. Adjust **VR105** that the "dB" of "IF normal" and "IF narrow" are the same with each other.

FM SIGNAL GENERATOR CONDITION

Modulation 30%

Modulation frequency...........1kHz

Output level...........................26dB


FM-SG
Unit
Out
FM ANT
FL
75Ω

38kHz CANCEL CIRCUIT ADJUSTMENT

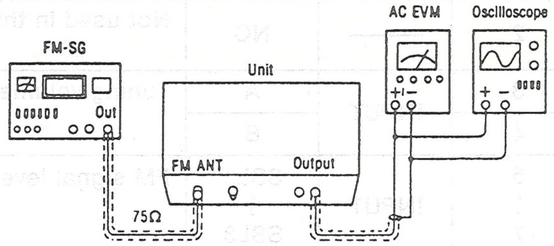
1. Test equipment connection is shown in figure.
2. Set the unit to "**FM**" position.
3. Set the radio frequency display and signal generator to **100.10MHz.**
4. Adjust **VR303** so that the output is minimized.

FM SIGNAL GENERATOR CONDITION

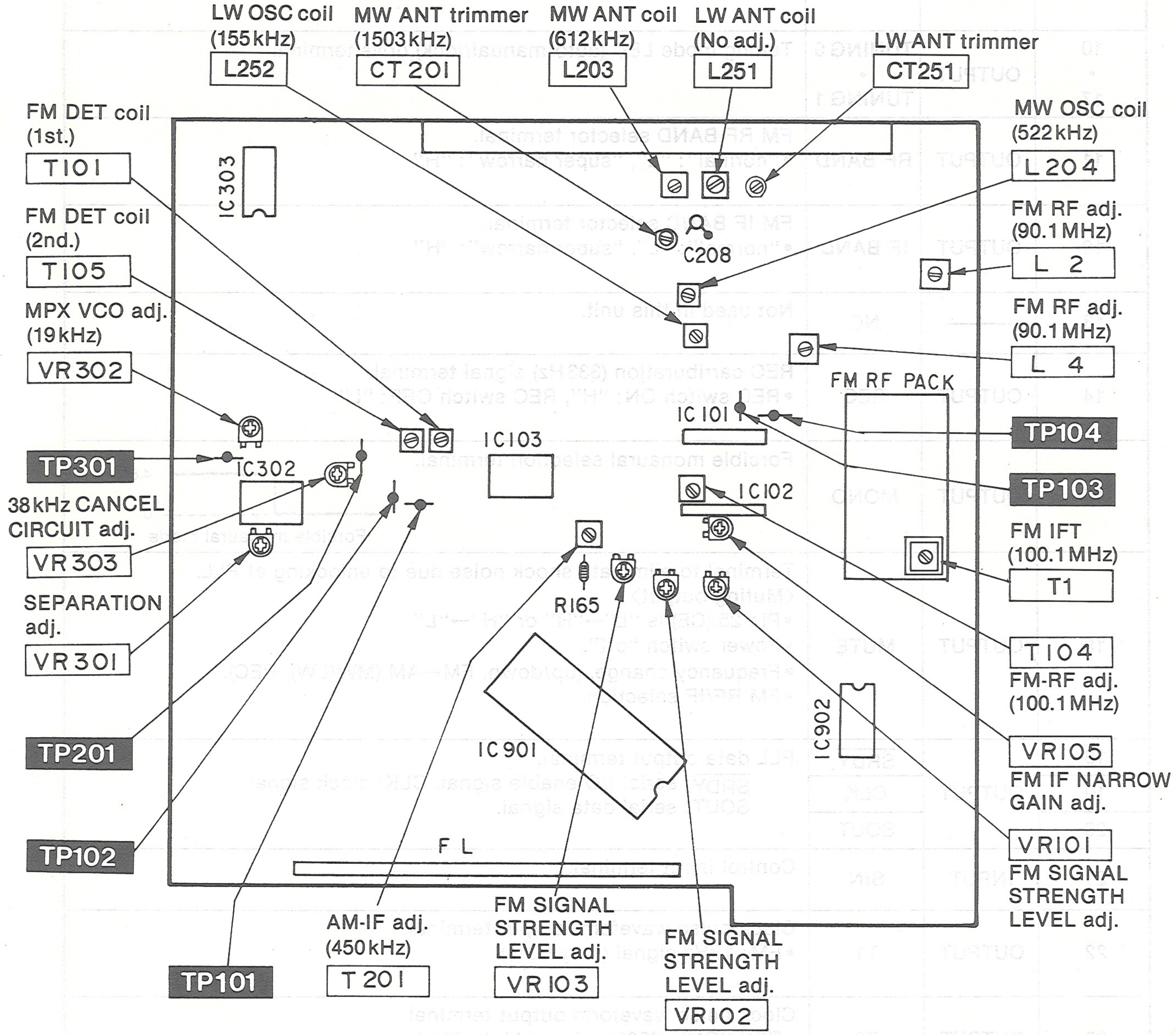
Modulation ....Stereo "L+R" mode 0%, Pilot 10%

Modulation frequency............1kHz (Pilot 19kHz)

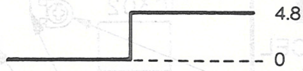
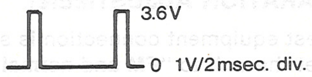
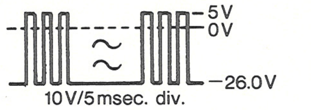
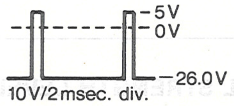
Output level...........................66dB


AC EVM
Oscilloscope
FM-SG
Out
Unit
FM ANT
Output
75Ω

• Adjustment Points


LW OSC coil (155kHz)
L252
MW ANT trimmer (1503kHz)
CT 201
MW ANT coil (612kHz)
L203
LW ANT coil (No adj.)
L251
LW ANT trimmer
CT251
FM DET coil (1st.)
T101
FM DET coil (2nd.)
T105
MPX VCO adj. (19kHz)
VR302
TP301
38kHz CANCEL CIRCUIT adj.
VR303
SEPARATION adj.
VR301
TP201
TP102
TP101
AM-IF adj. (450kHz)
T 201
FM SIGNAL STRENGTH LEVEL adj.
VR103
FM SIGNAL STRENGTH LEVEL adj.
VR102
MW OSC coil (522kHz)
L204
FM RF adj. (90.1MHz)
L 2
FM RF adj. (90.1MHz)
L 4
TP104
TP103
FM IFT (100.1MHz)
T1
T104
FM-RF adj. (100.1MHz)
VR105
FM IF NARROW GAIN adj.
VR101
FM SIGNAL STRENGTH LEVEL adj.
IC303
C208
IC103
IC101
IC302
IC102
FM RF PACK
R165
IC901
IC902
FL

FUNCTION OF TERMINAL (IC901: M50941-421SP)

PIN NO.	IN/OUT	MARK	DESCRIPTION OF TERMINAL
1	INPUT	VREF	Reference voltage terminal.
2	———	NC	Not used in this unit.
3	INPUT	A	Tuning volume up/down control terminal.
4		B	
5 ~ 7	INPUT	SSL1 ~ SSL3	FM signal level detector terminal.
8	INPUT	SD	Station detection of auto tuning terminal. • Received: "H", No signal: "L"
9	INPUT	STEREO	Stereo signal detection terminal. • Stereo: "L", Monaural: "H"
10 • 17	OUTPUT	TUNING 0 • TUNING 1	Tuning mode LED (auto/manual/lock) drive terminal.
11	OUTPUT	RF BAND	FM RF BAND selector terminal. • "normal": "L", "super narrow": "H"
12	OUTPUT	IF BAND	FM IF BAND selector terminal. • "normal": "L", "super narrow": "H"
13	———	NC	Not used in this unit.
14	OUTPUT	REC	REC carriburation (333 Hz) signal terminal. • REC switch ON: "H", REC switch OFF: "L"
15	OUTPUT	MONO	Forcible monaural selection terminal. 
16	OUTPUT	MUTE	Terminal to eliminate shock noise due to unlocking at PLL. 〈Muting output〉 • Pin 25 (CE) is "L"→"H" or "H"→"L" • Power switch "off". • Frequency change. (up/down, FM↔AM (MW/LW), REC). • FM RF/IF selection.
18	OUTPUT	$\overline{\text{SRDY}}$	PLL data output terminal. $\overline{\text{SRDY}}$: serial I/O enable signal, CLK: clock signal, SOUT: serial data signal.
19		CLK	
20		SOUT	
21	INPUT	SIN	Control input terminal.
22	OUTPUT	T1	Clock pulse waveform output terminal. • FM: 1 kHz signal (duty 50%)
23	OUTPUT	T2	Clock pulse waveform output terminal. • REC "ON": 333 Hz signal (duty 50%)
24	INPUT	$\overline{\text{INT1}}$	Remote control input terminal. Not used in this unit.
25	INPUT	$\overline{\text{INT2}}$	Power supply detection terminal.
26 • 32	———	Vss	Ground terminal.
27	INPUT	RESET	Reset signal terminal.
28	INPUT	XIN	Connecting terminal for crystal oscillator.
29	OUTPUT	XOUT	
30	———	XCIN	Not used in this unit.
31	———	XCOUT	
33	———	NC	
34 ~ 37	INPUT	R0 ~ R3	Terminal for key return signal to external key matrix. 
38	INPUT	VP	Power supply terminal for FL display.
39 ~ 54	OUTPUT	S0 ~ S15	Segment signal terminal for FL dispaly. 
55	———	NC	Not used in this unit.
56 ~ 62	OUTPUT	T1 ~ T7	Terminal for key scan signal to external key matrix and grid signal terminal for FL display. 
63	INPUT	AVcc	Power supply terminal of device.
64	INPUT	Vcc	

■ RESISTORS & CAPACITORS

Notes : ＊ Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
＊ Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Numbering System of Resistor

Example:

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1KΩ)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470Ω)

Resistor Type	Wattage		Tolerance
ERD : Carbon	10 : 1/8W	12 : 1/2W	J : ±5%
ERG : Metal Oxide	14 : 1/4W	25 : 1/4W	F : ±1%
ERQ : Fuse Type Metal	1A : 1W	18 : 1/8W	G : ±2%
ERX : Metal Film	S2 : 1/4W	S1 : 1/2W	J : ±5%
ERD L : Carbon (chip)	2F : 1/4W	50 : 1/2W	K : ±10%
ERO K : Metal Film (chip)	2A : 2W	3A : 3W	M : ±20%
ERC : Solid	6G : 1/10W	8G : 1/8W	
ERF : Incombustible Box-Shaped			
ERM : Wire-Wound			
RRJ : Cip Resistor			
ERJ : Cip Resistor			

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001μF)	Tolerance	Peculiarity
ECEA	50	M	330	
Type	Voltage (50V)	Pecliarity	Value (33μF)	

Capacitor Type	Voltage		Tolerance
ECE : Electrolytic	0J : 6.3V	1A : 10V	K : ±10%
ECCD : Ceramic	1C : 16V	1E : 25V	M : ±20%
ECKD : Ceramic Capacitor	1H : 50V	1V : 35V	Z : $^{+80}_{-20}$ %
ECQM : Poyester	50 : 50V	05 : 50V	J : ±5%
ECQP : Polypropylene	2H : 500V	2A : 100V	G : ±2%
ECG : Ceramic	1 : 100V	1J : 63V	F : ±1%
ECEA N : Non Polar Electrolytic	KC : 400V AC		C : ±0.25pF
QCU : Ceramic (Chip Type)	KC : 125V AC		D : ±0.5pF
ECUX : Ceramic (Chip Type)	(UL)		
ECF : Semiconductor			
EECW : Liquid electrolyte double layer capacitor			

- ● Capacity are in microfarads (μF) unless specified otherwise, P = Pico-farads (pF) F = Farads (F).
- ● Resistance are in ohms (Ω), unless specified otherwise, 1K = 1,000Ω, 1M = 1,000kΩ

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)			R134	ERDS2TJ822	8.2K 1/4	R316	ERDS2TJ393	39K 1/4
R1	ERDS2TJ104	100K 1/4	R135	ERDS2TJ333	33K 1/4	R317	ERDS2TJ274	270K 1/4
R2	ERDS2TJ273	27K 1/4	R136	ERDS2TJ684	680K 1/4	R318	ERDS2TJ104	100K 1/4
R4	ERDS2TJ104	100K 1/4	R137	ERDS2TJ473	47K 1/4	R319	ERDS2TJ102	1K 1/4
R5	ERDS2TJ104	100K 1/4	R165	ERDS2TJ154	150K 1/4	R320	ERDS2TJ123	12K 1/4
R6	ERDS2TJ823	82K 1/4	R166	ERDS2TJ184	180K 1/4	R321	ERDS2TJ183	18K 1/4
R7	ERDS2TJ103	10K 1/4	R167	ERDS2TJ223	22K 1/4	R322	ERDS2TJ393	39K 1/4
R8	ERDS2TJ100	10 1/4	R168	ERDS2TJ223	22K 1/4	R323	ERDS2TJ332	3.3K 1/4
R9	ERDS2TJ104	100K 1/4	R169	ERDS2TJ683	68K 1/4	R324	ERDS2TJ332	3.3K 1/4
R10	ERDS2TJ820	82 1/4	R170	ERDS2TJ473	47K 1/4	R325	ERDS2TJ333	33K 1/4
R11	ERDS2TJ820	82 1/4	R172	ERDS2TJ103	10K 1/4	R326	ERDS2TJ333	33K 1/4
R12	ERDS2TJ101	100 1/4	R173	ERDS2TJ223	22K 1/4	R327	ERDS2TJ223	22K 1/4
R101	ERDS2TJ820	82 1/4	R174	ERDS2TJ473	47K 1/4	R328	ERDS2TJ223	22K 1/4
R102	ERDS2TJ472	4.7K 1/4	R177	ERDS2TJ563	56K 1/4	R329	ERDS2TJ101	100 1/4
R103	ERDS2TJ331	330 1/4	R179	ERDS2TJ222	2.2K 1/4	R330	ERDS2TJ101	100 1/4
R104	ERDS2TJ562	5.6K 1/4	R180	ERDS2TJ564	560K 1/4	R331	ERDS2TJ102	1K 1/4
R105	ERDS2TJ331	330 1/4	R181	ERDS2TJ331	330 1/4	R332	ERDS2TJ102	1K 1/4
R106	ERDS2TJ331	330 1/4	R182	ERDS2TJ563	56K 1/4	R333	ERDS2TJ331	330 1/4
R107	ERDS2TJ561	560 1/4	R184	ERDS2TJ471	470 1/4	R334	ERDS2TJ331	330 1/4
R108	ERDS2TJ123	12K 1/4	R201	ERDS2TJ473	47K 1/4	R335	ERDS2TJ332	3.3K 1/4
R109	ERDS2TJ103	10K 1/4	R202	ERDS2TJ222	2.2K 1/4	R336	ERDS2TJ332	3.3K 1/4
R110	ERDS2TJ472	4.7K 1/4	R203	ERDS2TJ563	56K 1/4	R337	ERDS2TJ332	3.3K 1/4
R111	ERDS2TJ331	330 1/4	R204	ERDS2TJ222	2.2K 1/4	R338	ERDS2TJ332	3.3K 1/4
R113	ERDS2TJ221	220 1/4	R205	ERDS2TJ101	100 1/4	R341	ERDS2TJ104	100K 1/4
R115	ERDS2TJ681	680 1/4	R206	ERDS2TJ473	47K 1/4	R342	ERDS2TJ104	100K 1/4
R116	ERDS2TJ332	3.3K 1/4	R208	ERDS2TJ104	100K 1/4	R343	ERDS2TJ273	27K 1/4
R117	ERDS2TJ332	3.3K 1/4	R209	ERDS2TJ102	1K 1/4	R344	ERDS2TJ334	330K 1/4
R118	ERDS2TJ332	3.3K 1/4	R210	ERDS2TJ822	8.2K 1/4	R345	ERDS2TJ473	47K 1/4
R119	ERDS2TJ331	330 1/4	R211	ERDS2TJ473	47K 1/4	R346	ERDS2TJ104	100K 1/4
R120	ERDS2TJ102	1K 1/4	R212	ERDS2TJ101	100 1/4	R349	ERDS2TJ104	100K 1/4
R121	ERDS2TJ102	1K 1/4	R213	ERDS2TJ473	47K 1/4	R351	ERDS2TJ393	39K 1/4
R122	ERDS2TJ331	330 1/4	R251	ERDS2TJ103	10K 1/4	R353	ERDS2TJ561	560 1/4
R123	ERDS2TJ272	2.7K 1/4	R252	ERDS2TJ182	1.8K 1/4	R357	ERDS2TJ102	1K 1/4
R124	ERDS2TJ331	330 1/4	R253	ERDS2TJ223	22K 1/4	R359	ERDS1FJ121	120 1/2
R125	ERDS2TJ103	10K 1/4	R254	ERDS2TJ182	1.8K 1/4	R361	ERDS2TJ184	180K 1/4
R126	ERDS2TJ472	4.7K 1/4	R255	ERDS2TJ473	47K 1/4	R362	ERDS1FJ121	120 1/2
R129	ERDS2TJ392	3.9K 1/4	R309	ERDS2TJ101	100 1/4	R364	ERDS2TJ473	47K 1/4
R130	ERDS2TJ221	220 1/4	R310	ERDS2TJ274	270K 1/4	R704	ERDS2TJ101	100 1/4
R131	ERDS2TJ101	100 1/4	R311	ERDS2TJ472	4.7K 1/4	R707	ERDS2TJ222	2.2K 1/4
R132	ERDS2TJ104	100K 1/4	R312	ERDS2TJ274	270K 1/4	R708	ERDS2TJ222	2.2K 1/4
R133	ERDS2TJ182	1.8K 1/4	R314	ERDS2TJ683	68K 1/4	R710	ERDS2TJ391	390 1/4
			R315	ERDS2TJ393	39K 1/4	R711	ERDS2TJ472	4.7K 1/4

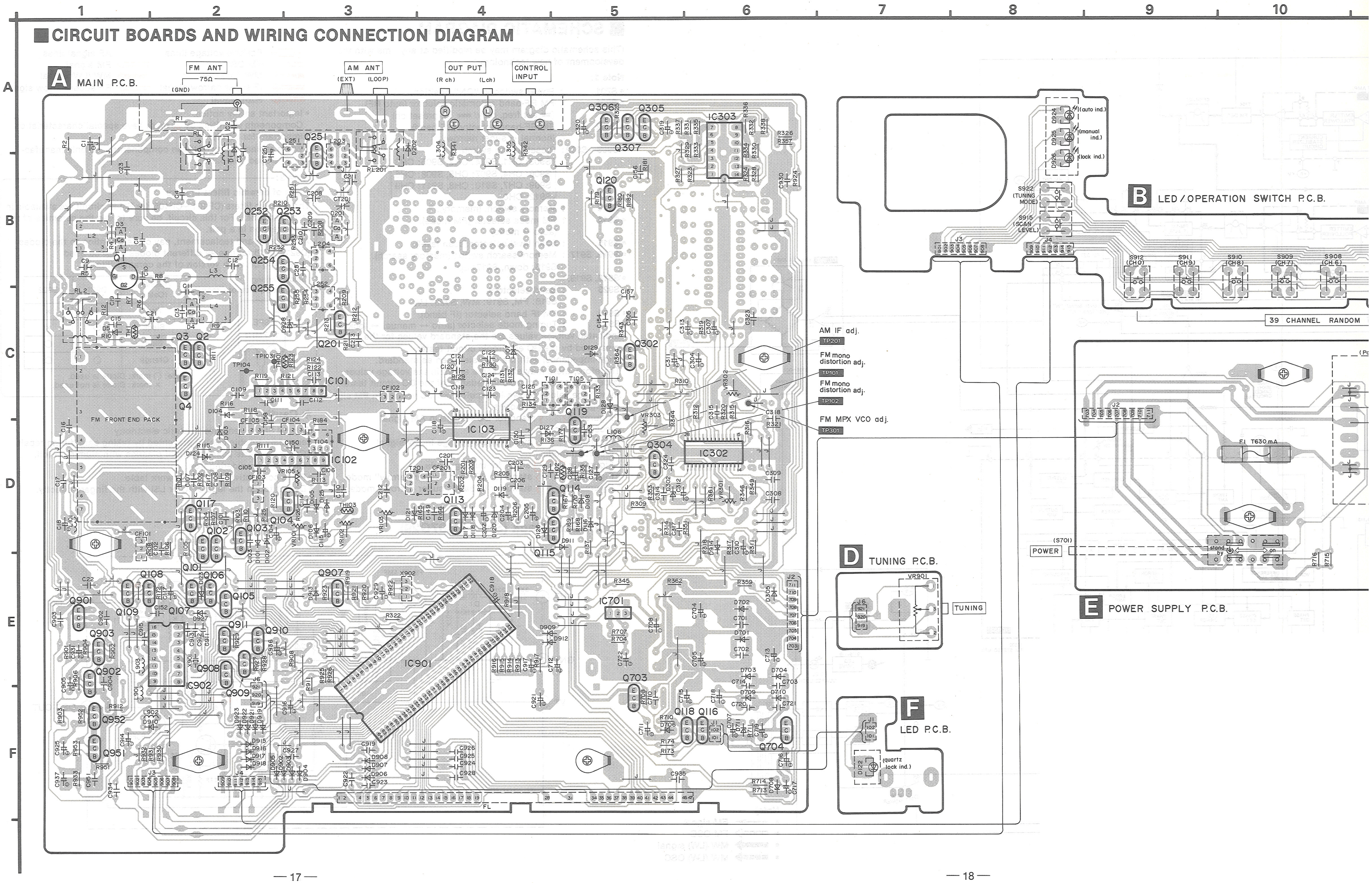
Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
R713	ERDS2TJ101	100 1/4	C102	ECKD1H103PF	0.01 50	C314	ECKD1H103PF	0.01 50
R714	ERDS2TJ101	100 1/4	C103	ECBT1H102KB5	0.001 50	C315	ECQP1391JZ	390P 100
R715	ERDS2TJ470	47 1/4	C104	ECEA1HKR22	0.22 50	C317	ECFTD104KXL	0.1 25
R716	ERDS2TJ470	47 1/4	C105	ECKD1H103PF	0.01 50	C318	ECKD1H103PF	0.01 50
R901	ERDS2TJ682	6.8K 1/4	C106	ECKD1H103PF	0.01 50	C319	ECEA1CKS100	10 16
R902	ERDS2TJ123	12K 1/4	C107	ECKD1H103PF	0.01 50	C320	ECEA1VK100B	10 35
R903	ERDS2TJ102	1K 1/4	C108	ECKD1H103PF	0.01 50	C323	ECKD1H223PF	0.022 50
R904	ERDS2TJ681	680 1/4	C109	ECKD1H103PF	0.01 50	C324	ECQM1H332JZ	0.0033 50
R906	ERDS2TJ472	4.7K 1/4	C110	ECKD1H103PF	0.01 50	C701	ECKD2H102ZF	0.001 500
R908	ERDS2TJ123	12K 1/4	C111	ECKD1H103PF	0.01 50	C702	ECKD1H103PF	0.01 50
R911	ERDS2TJ102	1K 1/4	C112	ECKD1H103PF	0.01 50	C703	ECKD2H102ZF	0.001 500
R912	ERDS2TJ102	1K 1/4	C113	ECKD1H103PF	0.01 50	C704	ECEA1CU222	2200 16
R913	ERDS2TJ104	100K 1/4	C114	ECBT1H102KB5	0.001 50	C705	ECEA1CU222	2200 16
R914	ERDS2TJ104	100K 1/4	C115	ECEA1HKR22	0.22 50	C707	ECEA1HKR47	0.47 50
R915	ERDS2TJ104	100K 1/4	C117	ECEA1VK100B	10 35	C708	ECEA1CU221	220 16
R916	ERDS2TJ104	100K 1/4	C118	ECEA50V330V	330 50	C710	ECKD1H103PF	0.01 50
R917	ERDS2TJ681	680 1/4	C119	ECQM1H223JZ	0.022 50	C711	ECEA1VU470	47 35
R918	ERDS2TJ103	10K 1/4	C120	ECQM1H122JZ	0.0012 50	C712	ECEA0JU101	100 6.3
R919	ERDS2TJ103	10K 1/4	C121	RCBS1H180JCY	18P 50	C713	ECEA1VU101	100 35
R920	ERDS2TJ104	100K 1/4	C122	ECQM1H122JZ	0.0012 50	C714	ECKD2H102ZF	0.001 500
R921	ERDS2TJ103	10K 1/4	C123	ECKD1H103PF	0.01 50	C715	ECEA1VU101	100 35
R922	ERDS2TJ105	1M 1/4	C124	ECKD1H103PF	0.01 50	C716	ECEA1VK100B	10 35
R923	ERDS2TJ102	1K 1/4	C125	RCBS1H6R8KCY	6.8P 50	C717	ECEA1VK3R3	3.3 35
R924	ERDS2TJ102	1K 1/4	C127	ECEA0JU101	100 6.3	C718	ECEA1VU470	47 35
R925	ERDS2TJ104	100K 1/4	C128	ECEA1HKR22	0.22 50	C719	ECEA1VU470	47 35
R926	ERDS2TJ104	100K 1/4	C129	ECKD1H103PF	0.01 50	C720	ECKD2H102ZF	0.001 500
R927	ERDS2TJ473	47K 1/4	C130	ECQM1H223JZ	0.022 50	C721	ECKD2H102ZF	0.001 500
R928	ERDS2TJ473	47K 1/4	C149	ECKD1H103PF	0.01 50	C722	ECEA0JU471	470 6.3
R929	ERDS2TJ153	15K 1/4	C150	ECKD1H103PF	0.01 50	C902	ECQM1H223JZ	0.022 50
R930	ERDS2TJ181	180 1/4	C152	ECFTD104KXL	0.1 25	C903	ECKD1H223PF	0.022 50
R931	ERDS2TJ471	470 1/4	C153	ECBT1H102KB5	0.001 50	C904	ECKD1H103PF	0.01 50
R932	ERDS2TJ181	180 1/4	C154	RCBS1H390JLY	39P 50	C905	ECEA25M4R7R	4.7 25
R933	ERDS2TJ221	220 1/4	C156	ECBT1H102KB5	0.001 50	C911	RCBS1H180JCY	18P 50
R951	ERDS2TJ102	1K 1/4	C157	RCBS1H180JCY	18P 50	C912	RCBS1H150JCY	15P 50
R952	ERDS2TJ332	3.3K 1/4	C158	RCBC1H470JLY	47P 50	C913	RCBC1H101KBY	100P 50
R953	ERDS2TJ123	12K 1/4	C201	ECKD1H103PF	0.01 50	C914	ECEA0JU471	470 6.3
CAPACITORS(VALUE,VOLTAGE)			C202	ECEA0JK330	33 6.3	C915	ECBT1H102KB5	0.001 50
C1	ECEA1VK3R3	3.3 35	C203	ECKD1H103PF	0.01 50	C916	ECEA1VK100B	10 35
C2	ECBT1H102KB5	0.001 50	C204	ECEA1HKR47	0.47 50	C917	ECEA0JU101	100 6.3
C3	ECBT1H102KB5	0.001 50	C205	ECEA0JK330	33 6.3	C918	ECEA0JS102	1000 6.3
C4	RCBS1H6R8KCY	6.8P 50	C206	ECKD1H223PF	0.022 50	C919	ECKD1H103PF	0.01 50
C8	ECCT1H030CC	3P 50	C208	ECKD1H473ZF	0.047 50	C921	ECEA0JU222	2200 6.3
C9	RCBS1H1R0MCY	1P 50	C209	RCBS1H220JCY	22P 50	C922	RCBC1H101KBY	100P 50
C10	ECKD1H102MDL	0.001 50	C210	ECQP1471JZ	470P 125	C923	RCBC1H101KBY	100P 50
C11	RCBS1H100JCY	10P 50	C211	ECKD1H223PF	0.022 50	C924	RCBC1H101KBY	100P 50
C12	ECBT1H102KB5	0.001 50	C212	ECKD1H103PF	0.01 50	C925	RCBC1H101KBY	100P 50
C13	RCBC1H2R7KCY	2.7P 50	C213	ECKD1H103PF	0.01 50	C926	RCBC1H101KBY	100P 50
C15	ECBT1H102KB5	0.001 50	C251	ECQP1391JZ	390P 100	C927	RCBC1H101KBY	100P 50
C16	ECQM1H223JZ	0.022 50	C304	ECEA1HKR22	0.22 50	C928	RCBC1H101KBY	100P 50
C17	ECKD1H103PF	0.01 50	C305	ECQM1H183JZ	0.018 50	C929	ECEA1VK3R3	3.3 35
C18	ECEA1VK100B	10 35	C307	ECEA1HKR22	0.22 50	C930	ECKD1H103PF	0.01 50
C19	ECBT1H102KB5	0.001 50	C308	ECQB1H153JZ	0.015 50	C931	ECEA1HKR47	0.47 50
C21	RCBS1H1R5MCY	1.5P 50	C309	ECQB1H153JZ	0.015 50	C934	RCBC1H101KBY	100P 50
C22	ECQM1H223JZ	0.022 50	C310	ECEA1VK3R3	3.3 35	C935	RCBC1H101KBY	100P 50
C23	ECKD1H103PF	0.01 50	C311	ECEA1VK100B	10 35	C936	ECEA0JK330	33 6.3
C101	ECKD1H103PF	0.01 50	C312	ECEA1AU101	100 10	C937	ECEA1VK100B	10 35
			C313	ECEA1HKR47	0.47 50	C951	ECKD1H103PF	0.01 50
						C952	ECEA1HK010	1 50

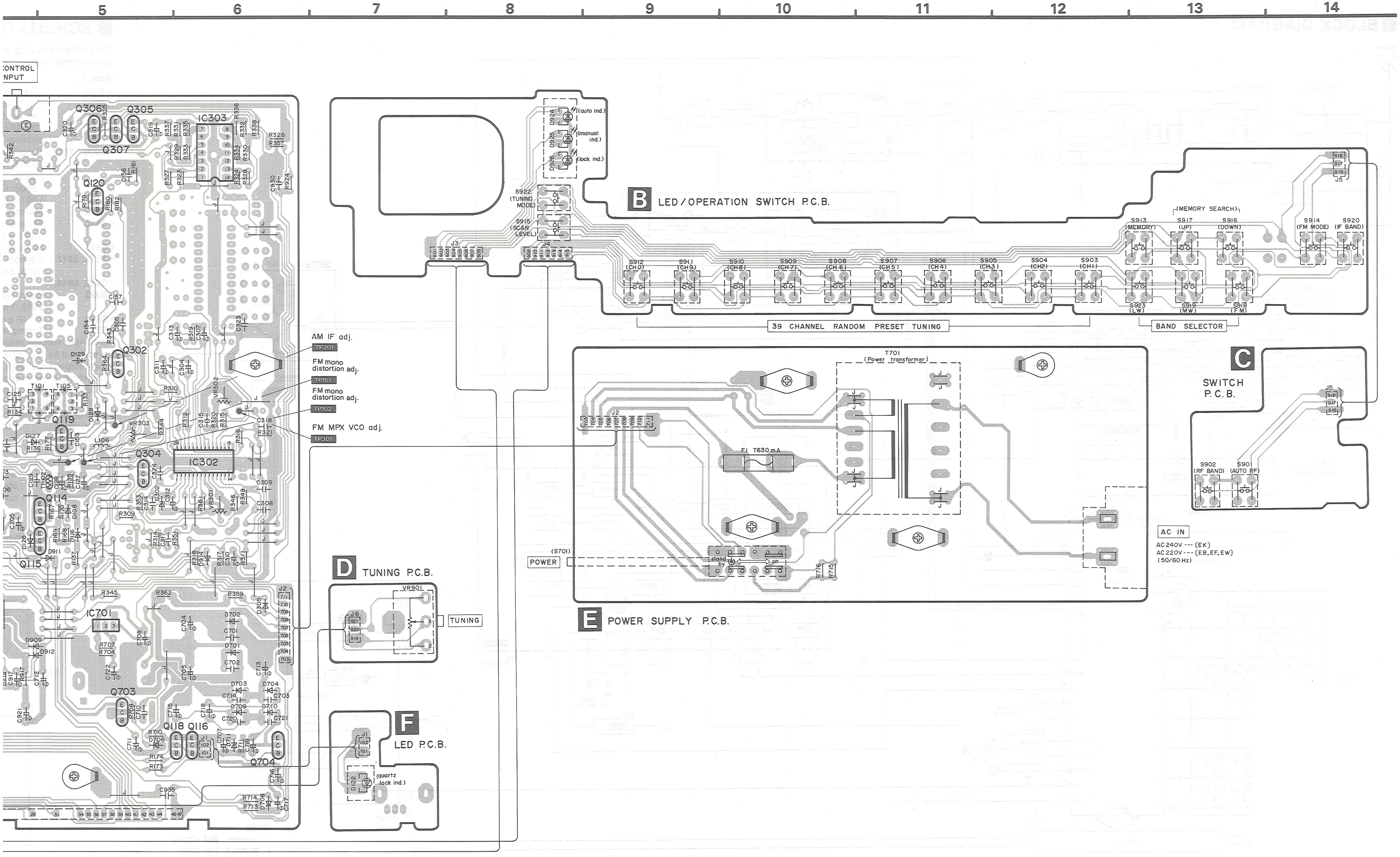
REPLACEMENT PARTS LIST

Notes : ＊ Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
＊ Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

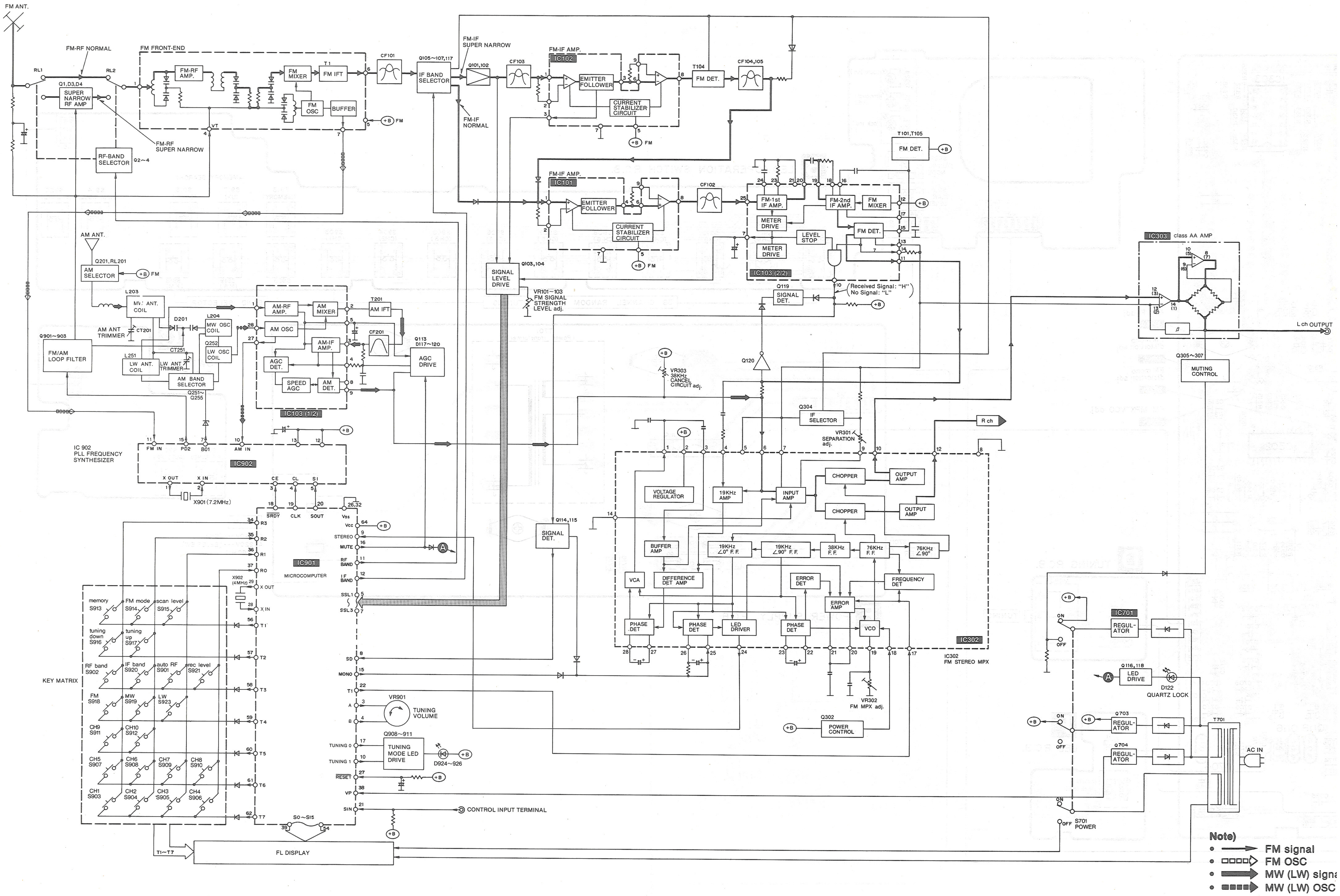
Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC101	AN278	I.C.IF AMP
IC102	AN278	I.C.IF AMP
IC103	AN7274NS	I.C.FM IF AMP
IC302	AN7472S	I.C..MPX
IC303	AN6554F	I.C.CLASS AA AMP
IC701	AN78M12	I.C.REGULATOR
IC901	M50941-421SP	I.C.MICRO COMPUTER
IC902	LM7001	I.C.PLL
TRANSISTORS		
Q1	3SK74L1	TRANSISTOR
Q2	DTA114YSTP	TRANSISTOR
Q3	DTA114YSTP	TRANSISTOR
Q4	DTC144A	TRANSISTOR
Q101	2SC2786M	TRANSISTOR
Q102	2SC2786M	TRANSISTOR
Q103	2SC3311A-Q	TRANSISTOR
Q104	2SC3311A-Q	TRANSISTOR
Q105	DTC144A	TRANSISTOR
Q106	DTA114YSTP	TRANSISTOR
Q107	DTA114YSTP	TRANSISTOR
Q108	DTA114YSTP	TRANSISTOR
Q109	2SC3311A-Q	TRANSISTOR
Q113	DTC144A	TRANSISTOR
Q114	DTC144A	TRANSISTOR
Q115	2SC3311A-Q	TRANSISTOR
Q116	2SC3311A-Q	TRANSISTOR
Q117	2SA1309A-R	TRANSISTOR
Q118	2SC3311A-Q	TRANSISTOR
Q119	2SC3311A-Q	TRANSISTOR
Q120	2SC3311A-Q	TRANSISTOR
Q201	2SA1309A-R	TRANSISTOR
Q251	2SA1309A-R	TRANSISTOR
Q252	2SC3311A-Q	TRANSISTOR
Q253	2SC3311A-Q	TRANSISTOR
Q254	2SC3311A-Q	TRANSISTOR
Q255	DTA114YSTP	TRANSISTOR
Q302	DTA114YSTP	TRANSISTOR
Q304	2SC3311A-Q	TRANSISTOR
Q305	2SD1450TTA	TRANSISTOR
Q306	2SD1450TTA	TRANSISTOR
Q307	2SA1309A-R	TRANSISTOR
Q703	2SD592ANCQ	TRANSISTOR
Q704	2SA1309A-R	TRANSISTOR
Q901	2SA1309A-R	TRANSISTOR
Q902	2SC1310EFG	TRANSISTOR
Q903	2SC1310EFG	TRANSISTOR
Q907	DTC144A	TRANSISTOR
Q908	DTC114YSTP	TRANSISTOR
Q909	DTC114YSTP	TRANSISTOR
Q910	2SC3311A-Q	TRANSISTOR
Q911	DTC114YSTP	TRANSISTOR
Q951	2SC3311A-Q	TRANSISTOR
Q952	2SC3311A-Q	TRANSISTOR
DIODES		
D1	MA165	DIODE
D3	1SV103B2	DIODE
D4	1SV103B2	DIODE
D5	MA165	DIODE
D101	MA700AT	DIODE
D102	MA700AT	DIODE
D103	MA165	DIODE
D104	MA165	DIODE
D105	MA700AT	DIODE
D106	MA700AT	DIODE
D107	MA165	DIODE
D108	MA165	DIODE
D116	MA165	DIODE
D117	MA165	DIODE
D118	MA165	DIODE
D119	MA165	DIODE
D120	MA4043M	DIODE
D121	MA165	DIODE
D122	LN014314P	DIODE
D123	MA165	DIODE
D124	MA165	DIODE
D125	MA165	DIODE
D126	MA165	DIODE
D127	MA165	DIODE
D128	MA165	DIODE
D129	MA165	DIODE
D201	SVC342LMTP	DIODE
D202	MA165	DIODE
D302	MA4082M	DIODE
D305	MA165	DIODE
D701 ⚠	SVD1SR35200A	RECTIFIER
D702 ⚠	SVD1SR35200A	RECTIFIER
D703	MA167	DIODE
D704	MA167	DIODE
D706	MA4062M	DIODE
D708	MA4056-M	DIODE
D709	MA167	DIODE
D710	MA167	DIODE
D711	MA4270	DIODE
D902	MA165	DIODE
D903	MA165	DIODE
D904	MA165	DIODE
D905	MA165	DIODE
D906	MA165	DIODE
D907	MA165	DIODE
D908	MA165	DIODE
D909	MA165	DIODE
D910	MA165	DIODE
D911	MA165	DIODE
D912	MA165	DIODE
D913	MA4030M	DIODE
D914	MA700AT	DIODE
D915	MA165	DIODE
D916	MA165	DIODE
D917	MA165	DIODE
D918	MA165	DIODE
D919	MA165	DIODE
D921	MA165	DIODE
D922	MA165	DIODE
D923	MA165	DIODE
D924	LN031306P1	DIODE
D925	LN031306P1	DIODE
D926	LN031306P1	DIODE
D927	MA4062M	DIODE
D928	MA4062M	DIODE
VARIABLE RESISTORS		
VR101	EVND4AA00B15	V.R.FM SIGNAL
VR102	EVND4AA00B15	V.R.FM SIGNAL
VR103	EVND4AA00B15	V.R.FM SIGNAL
VR105	EVND4AA00B14	V.R. FM.IF NARROW
VR301	EVND4AA00B15	V.R.SEPARATION
VR302	EVND4AA00B14	V.R.MPX VCO
VR303	EVND4AA00B55	V.R..19KHZ CANCEL
VR901	EVQWX9S2512B	V.R.TUNING
VARIABLE CAPACITORS		
CT251	SVCTZ03R200F	TRIMMER
THERMISTORS AND VARISTORS		
TH1	ERTD2ZHL333S	THERMISTOR
TH101	ERTD2ZHL332S	THERMISTOR
TH102	ERTD2ZHL332S	THERMISTOR
TH103	ERTD2ZHL333S	THERMISTOR
COILS AND TRANSFORMERS		
CT201	SVCTZ03T110F	TRIMMER
L2	SLA4P81	FM ANT COIL
L3	SLQAN40G1-P	CHOKE COIL
L4	SLD4P81	COIL
L101	RLQZP3R3KT-Y	COIL
L106	RLQZP101KT-Y	COIL
L203	SLA2B3-P	ANTENNA COIL
L204	SL02B9R-P	OSCILLATOR COIL
L251	SLA1B7R-P	ANTENNA COIL
L252	SL01B5-P	OSCILLATOR COIL
L304	RLQZPR47KT-Y	CHOKE COIL
L305	RLQZPR47KT-Y	CHOKE COIL
L901	RLQZP3R3KT-Y	COIL
L902	RLQZP3R3KT-Y	COIL
L903	RLQZPR22KT-Y	COIL
T101	SLI4B520-Z	I.F. TRANSFORMER
T104	SLI4B108-Z	I.F. TRANSFORMER
T105	SLI4B521-Z	I.F. TRANSFORMER
T201	SLI2B103-M	I.F. TRANSFORMER
T701 ⚠ (EW, EF, EB)	SLT5K248	POWER TRANSFORMER
T701 ⚠ (EK)	SLT5K249	POWER TRANSFORMER
FILTERS		
CF101	SVFE107MX2-L	CERAMIC FILTER
CF102	SVFE107MX2-L	CERAMIC FILTER
CF103	SVFE107MX2-L	CERAMIC FILTER
CF104	SVFE107MZ2-L	CERAMIC FILTER
CF105	SVFE107MZ2-L	CERAMIC FILTER
CF201	SVFSFP450HT	CERAMIC FILTER
OSCILLATORS		
X901	SVQ49U722-S	CRYSTAL OSCILLATOR
X902	EF0FC4004A4	CERAMIC FILTER
DISPLAYS		
FL	SAD7MT83ZK	DISPLAY TUBE
FRONT PACKS		
FE	SNVFE407G29	FRONT END PACK
FUSES		
F1 ⚠	XBA2C06TB0	FUSE 250V, T600mA
SWITCHES		
S701 ⚠	SSH1234	POWER SW
S901	SSG13	SW.AUTO RF
S902	SSG13	SW.FM RF BAND
S903	SSG13	SW.CH1
S904	SSG13	SW.CH2
S905	SSG13	SW.CH3
S906	SSG13	SW.CH4
S907	SSG13	SW.CH5
S908	SSG13	SW.CH6
S909	SSG13	SW.CH7
S910	SSG13	SW.CH8
S911	SSG13	SW.CH9
S912	SSG13	SW.CH0
S913	SSG13	SW.MEMORY
S914	SSG13	SW.FM MODE
S915	SSG13	SW.SCAN LEVEL SW
S916	SSG13	SW.DOWN
S917	SSG13	SW.UP
S918	SSG13	SW.FM
S919	SSG13	SW.AM
S920	SSG13	SW.FM IF BAND
S922	SSG13	SW.TUNING MODE
S923	SSG13	SW.LOW BAND
RELAYS		
RL1	SFDYG5A237P	RELAY
RL2	SFDYG5A237P	RELAY
RL201	SFDYG5A237P	RELAY

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
A MAIN P.C.B.
FM ANT
75Ω
(GND)
AM ANT
(EXT)
(LOOP)
OUT PUT
(R ch)
(L ch)
CONTROL INPUT
FM FRONT END PACK
IC101
IC102
IC103
IC302
IC303
IC701
IC901
IC902
AM IF adj.
TP201
FM mono distortion adj.
TP101
FM mono distortion adj.
TP102
FM MPX VCO adj.
TP301
FL
B LED/OPERATION SWITCH P.C.B.
(auto ind.)
(manual ind.)
(lock ind.)
S922 (TUNING MODE)
S915 (SCAN LEVEL)
S912 (CH10)
S911 (CH9)
S910 (CH8)
S909 (CH7)
S908 (CH6)
39 CHANNEL RANDOM
D TUNING P.C.B.
VR901
TUNING
E POWER SUPPLY P.C.B.
F1 T630mA
(S701)
POWER
stand by
on
F LED P.C.B.
(quartz lock ind.)
D122


5
6
7
8
9
10
11
12
13
14
CONTROL INPUT
Q306
Q305
Q307
IC303
Q120
Q302
T101
T105
Q119
VR302
VR303
L106
Q304
IC302
Q114
Q115
VR301
IC701
Q703
Q118
Q116
Q704
J2
AM IF adj.
TP201
FM mono distortion adj.
TP101
FM mono distortion adj.
TP102
FM MPX VCO adj.
TP301
D924 (auto ind.)
D925 (manual ind.)
D926 (lock ind.)
S922 (TUNING MODE)
S915 (SCAN LEVEL)
J3
J4
B
LED / OPERATION SWITCH P.C.B.
(MEMORY SEARCH)
S913 (MEMORY)
S917 (UP)
S916 (DOWN)
S914 (FM MODE)
S920 (IF BAND)
J5
S912 (CH10)
S911 (CH9)
S910 (CH8)
S909 (CH7)
S908 (CH6)
S907 (CH5)
S906 (CH4)
S905 (CH3)
S904 (CH2)
S903 (CH1)
S923 (LW)
S919 (MW)
S918 (FM)
39 CHANNEL RANDOM PRESET TUNING
BAND SELECTOR
C
SWITCH P.C.B.
S902 (RF BAND)
S901 (AUTO RF)
T701 (Power transformer)
F1 T630 mA
(S701)
POWER
stand by
on
R716
R715
AC IN
AC 240V --- (EK)
AC 220V --- (EB, EF, EW)
(50/60 Hz)
E
POWER SUPPLY P.C.B.
D
TUNING P.C.B.
VR901
J6
TUNING
F
LED P.C.B.
J1
D122 (quartz lock ind.)

BLOCK DIAGRAM


FM ANT.
FM-RF NORMAL
RL1
RL2
Q1,D3,D4
SUPER NARROW RF AMP
FM-RF SUPER NARROW
RF-BAND SELECTOR
Q2~4
FM FRONT-END
FM-RF AMP.
FM MIXER
T1
FM IFT
FM OSC
BUFFER
VT
+B FM
CF101
Q105~107,117
IF BAND SELECTOR
FM-IF SUPER NARROW
FM-IF NORMAL
Q101,102
CF103
FM-IF AMP.
IC102
EMITTER FOLLOWER
CURRENT STABILIZER CIRCUIT
T104
FM DET.
CF104,105
T101,T105
FM DET.
FM-IF AMP.
IC101
EMITTER FOLLOWER
CURRENT STABILIZER CIRCUIT
CF102
FM-1st IF AMP.
FM-2nd IF AMP.
FM MIXER
METER DRIVE
METER DRIVE
LEVEL STOP
FM DET.
IC103 (2/2)
Received Signal: "H"
No Signal: "L"
Q119
SIGNAL DET.
Q120
AM ANT.
Q201,RL201
AM SELECTOR
L203
MW ANT. COIL
AM ANT TRIMMER
CT201
D201
L204
MW OSC COIL
Q252
LW OSC COIL
CT251
L251
LW ANT. COIL
LW ANT TRIMMER
AM BAND SELECTOR
Q251~Q255
Q901~903
FM/AM LOOP FILTER
AM-RF AMP.
AM MIXER
AM OSC
AM-IF AMP.
AGC DET.
SPEED AGC
AM DET.
IC103 (1/2)
T201
AM IFT
CF201
Q113 D117~120
AGC DRIVE
Q103,104
SIGNAL LEVEL DRIVE
VR101~103 FM SIGNAL STRENGTH LEVEL adj.
VR303 38KHz CANCEL CIRCUIT adj.
IC 902 PLL FREQUENCY SYNTHESIZER
FM IN
PD2
B01
AM IN
IC902
X OUT
X IN
CE
CL
SI
X901 (7.2MHz)
SRDY
CLK
SOUT
Vss
Vcc
STEREO
MUTE
RF BAND
IF BAND
SSL1
SSL3
IC901
MICROCOMPUTER
X902 (4MHz)
X OUT
X IN
R3
R2
R1
R0
T1
T2
T3
T4
T5
T6
T7
SD
MONO
T1
A
B
TUNING 0
TUNING 1
RESET
VP
SIN
VR901
TUNING VOLUME
Q908~911
TUNING MODE LED DRIVE
D924~926
CONTROL INPUT TERMINAL
S0~S15
KEY MATRIX
memory S913
FM mode S914
scan level S915
tuning down S916
tuning up S917
RF band S902
IF band S920
auto RF S901
rec level S921
FM S918
MW S919
LW S923
CH9 S911
CH10 S912
CH5 S907
CH6 S908
CH7 S909
CH8 S910
CH1 S903
CH2 S904
CH3 S905
CH4 S906
T1~T7
FL DISPLAY
Q114,115
SIGNAL DET.
Q304
IF SELECTOR
VR301 SEPARATION adj.
R ch
VOLTAGE REGULATOR
19KHz AMP
INPUT AMP
CHOPPER
OUTPUT AMP
CHOPPER
OUTPUT AMP
BUFFER AMP
19KHz ∠0° F.F.
19KHz ∠90° F.F.
38KHz F.F.
76KHz F.F.
76KHz ∠90°
VCA
DIFFERENCE DET AMP
ERROR DET
FREQUENCY DET
ERROR AMP
PHASE DET
PHASE DET
LED DRIVER
PHASE DET
VCO
IC302
IC302 FM STEREO MPX
VR302 FM MPX adj.
Q302
POWER CONTROL
IC303 class AA AMP
β
L ch OUTPUT
Q305~307
MUTING CONTROL
IC701
REGUL-ATOR
Q116,118
LED DRIVE
D122 QUARTZ LOCK
Q703
REGUL-ATOR
Q704
REGUL-ATOR
T701
AC IN
ON
OFF
S701 POWER
+B
A
Note)
FM signal
FM OSC
MW (LW) signa
MW (LW) OSC

■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Note 1:

- **S701** : Power switch in "ON" position.
- **S901** : FM RF-band automatic-selector (auto RF).
  (▬ set freq. only/ ▬ all preset ch)
- **S902** : FM RF-band selector (RF band).
  (normal ↔ super narrow)
- **S903～S912**: Preset tuning switch.
  S903: CH1, S904: CH2, S905: CH3
  S906: CH4, S907: CH5, S908: CH6
  S909: CH7, S910: CH8, S911: CH9
  S912: CH0
- **S913** : Memory switch. (memory).
- **S914** : FM mode selector (FM mode).
  (auto ↔ mono)
- **S915** : Scan level selector (scan level).
- **S916, S917** : Memory search switch (memory search).
  S916: down, S917: up
- **S918, S919, S923** : Band selectors.
  S918: FM, S919: MW, S923: LW
- **S920** : FM IF band selector (IF band).
- **S922** : Tuning mode selector (auto ↔ manual ↔ lock).
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.
  Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
  All voltage values shown in circuitry are DC voltage in FM signal (no signal) reception modes.
  - * Figures in ( ) stand for DC voltage in AM signal reception mode.
  - * Figures in ⌜ ⌟ stand for DC voltage in LW signal reception mode.
  - * Figures in ▭ stand for muting mode.
  - * Figures in 〈 〉 stand for RF band "super narrow" mode.
  - * Figures in 《 》 stand for IF band "super narrow" mode.

—▭— Positive voltage lines
⇨ FM OSC
➡ MW (LW) OSC
⇨ IF super narrow signal
⇨ Pilot signal
⇨ AF signal lines
⇨ FM signal
➡ MW (LW) signal
⇨ RF super narrow signal

- Important safety notice.
  Components identified by ⚠ mark have special characteristics important for safety.
  When replacing any of these components, use only manufacturer's specified parts.

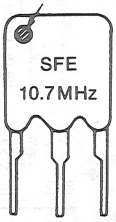
Note 2:

- **Use of ceramic filters in pairs**

The ceramic filters (CF101～CF105) for FM-IF circuit are available in three versions For this circuit, be sure to use the ceramics of the same version in a pair.

At repairing and replacement, pay close attention to the diodes (D921, D922) for use as different diodes must be used depending on each version of the ceramic filters.

Color marking
(Red, Black, Blue or Orange)



VERSION (Color)	D921	D922
Red	×	×
Black	○	×
Blue	×	○
Orange	○	○

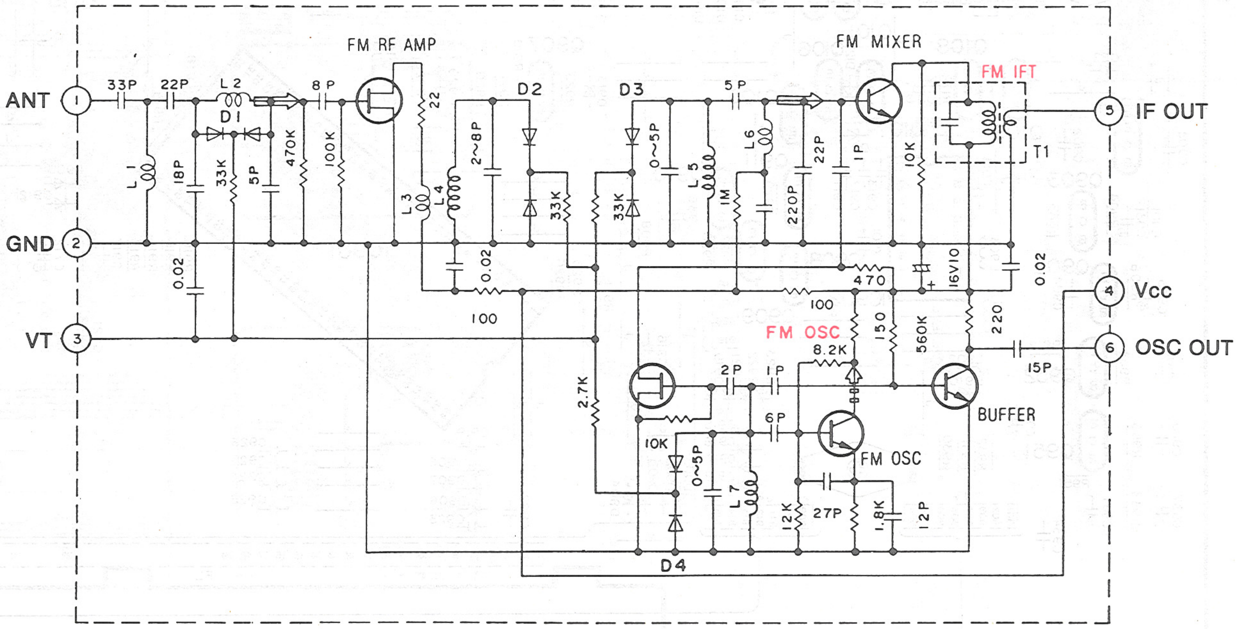
Note: ○ mark: Diode is used.
× mark: Diode is not used.

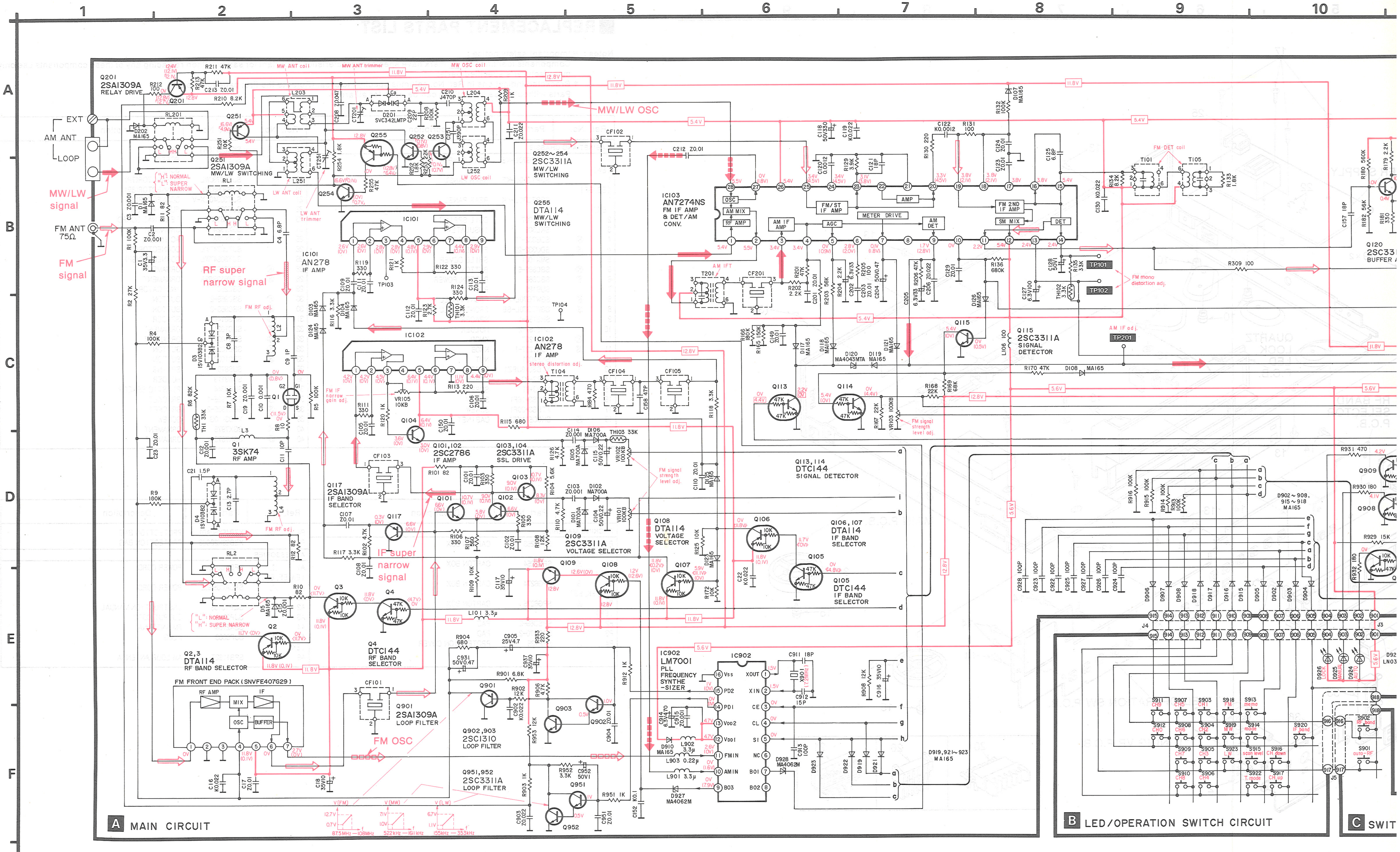
✻ Caution!

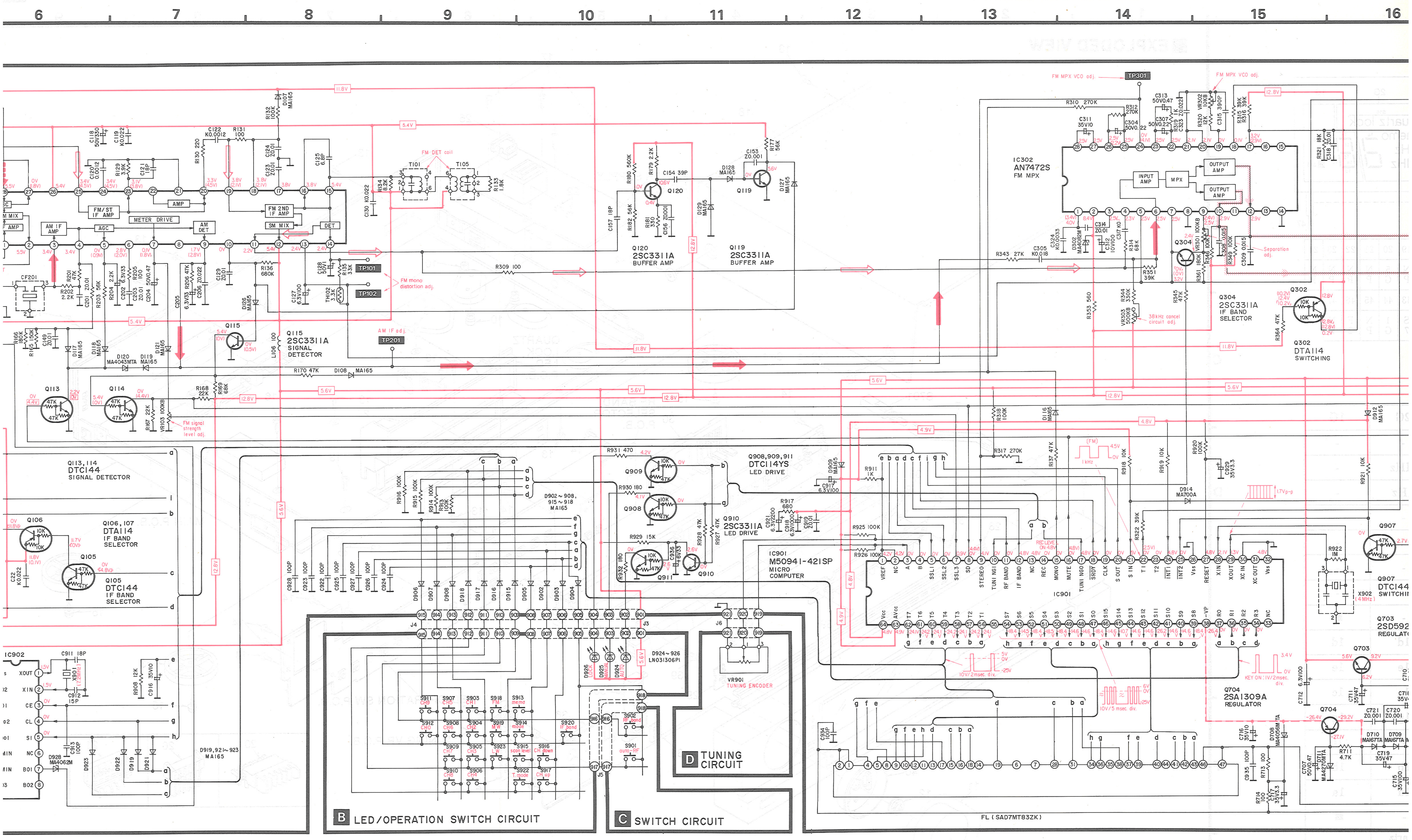
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

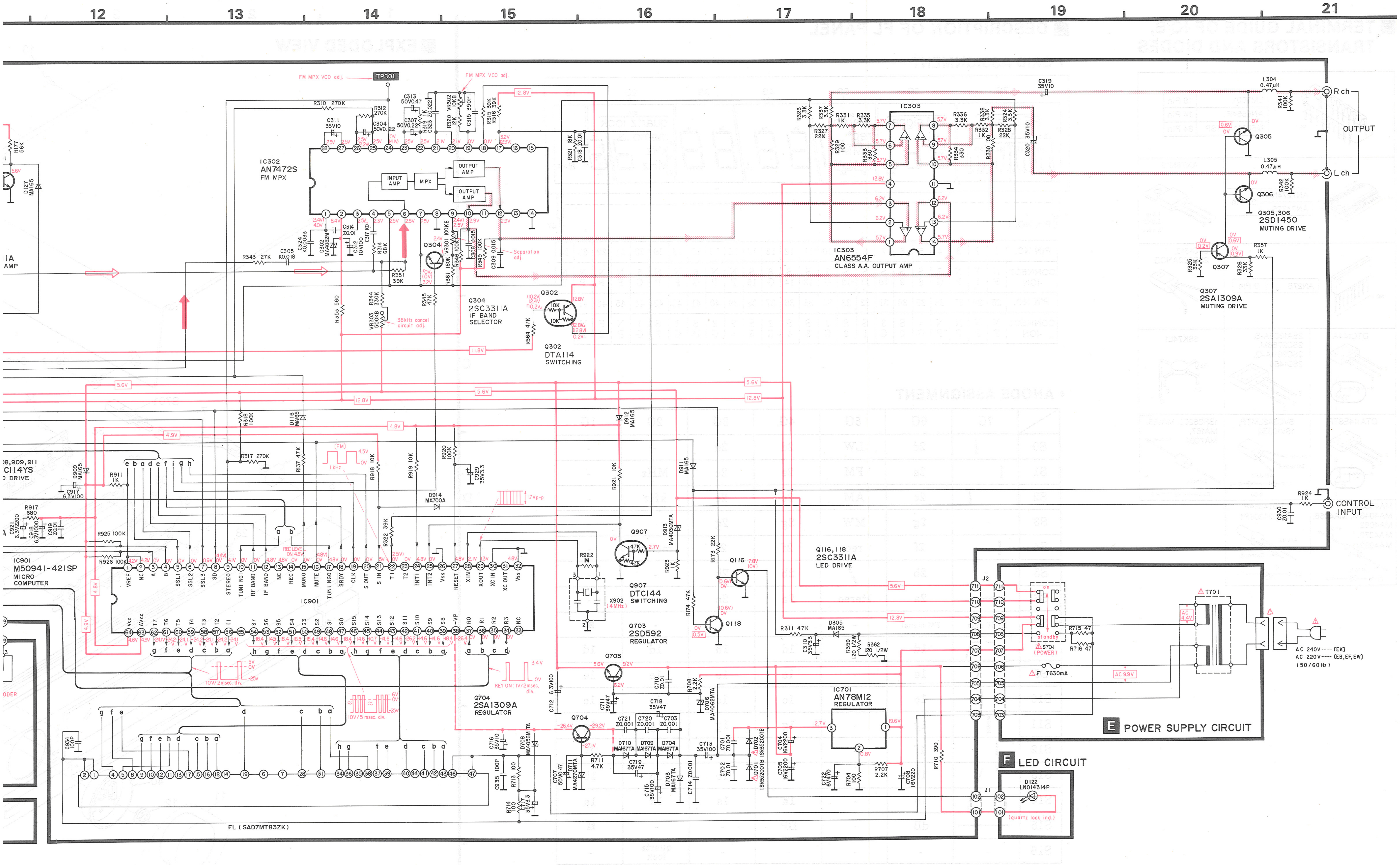
- Cover the parts boxes made of plastics with aluminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.

• FM Tuner Pack (SNVFE407G29)

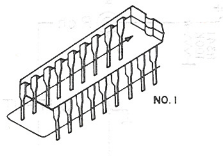



1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
Q201 2SA1309A RELAY DRIVE
EXT
AM ANT
LOOP
MW/LW signal
FM ANT 75Ω
FM signal
RF super narrow signal
Q251 2SA1309A MW/LW SWITCHING
"H": NORMAL "L": SUPER NARROW
MW ANT coil
MW ANT trimmer
MW OSC coil
LW ANT coil
LW ANT trimmer
LW OSC coil
D201 SVC342LMTP
MW/LW OSC
Q252~254 2SC3311A MW/LW SWITCHING
Q255 DTA114 MW/LW SWITCHING
IC101 AN278 IF AMP
IC102 AN278 IF AMP
IC103 AN7274NS FM IF AMP & DET/AM CONV.
OSC
AM MIX
RF AMP
AM IF AMP
FM/ST IF AMP
AMP
METER DRIVE
AGC
AM DET
FM 2ND IF AMP
SM MIX
DET
FM DET coil
AM IFT
T201
CF201
TP101
TP102
TP201
FM mono distortion adj.
AM IF adj.
Q115 2SC3311A SIGNAL DETECTOR
Q113,114 DTC144 SIGNAL DETECTOR
FM signal strength level adj.
Q120 2SC33 BUFFER
FM RF adj.
Q1 3SK74 RF AMP
Q2,3 DTA114 RF BAND SELECTOR
Q4 DTC144 RF BAND SELECTOR
"L": NORMAL "H": SUPER NARROW
Q101,102 2SC2786 IF AMP
Q103,104 2SC3311A SSL DRIVE
Q117 2SA1309A IF BAND SELECTOR
IF super narrow signal
FM IF narrow gain adj.
stereo distortion adj.
Q108 DTA114 VOLTAGE SELECTOR
Q109 2SC3311A VOLTAGE SELECTOR
Q106,107 DTA114 IF BAND SELECTOR
Q105 DTC144 IF BAND SELECTOR
FM FRONT END PACK (SNVFE407G29)
RF AMP
MIX
IF
OSC
BUFFER
Q901 2SA1309A LOOP FILTER
FM OSC
Q902,903 2SC1310 LOOP FILTER
Q951,952 2SC3311A LOOP FILTER
IC902 LM7001 PLL FREQUENCY SYNTHE-SIZER
Vss
PD2
PD1
VDD2
VDD1
FMIN
AMIN
BO3
XOUT
XIN
CE
CL
SI
NC
BO1
BO2
D902~908, 915~918 MA165
D919,921~923 MA165
V(FM)
V(MW)
V(LW)
87.5MHz~108MHz
522kHz~1611kHz
155kHz~353kHz
S911 CH9
S907 CH5
S903 CH1
S918 FM
S913 memo
S912 CH0
S908 CH6
S904 CH2
S919 MW
S914 mode
S920 IF band
S909 CH7
S905 CH3
S923 LW
S915 scan level
S916 CH down
S910 CH8
S906 CH4
S922 T.mode
S917 CH up
S901 auto-RF
J3
J4
J5
A MAIN CIRCUIT
B LED/OPERATION SWITCH CIRCUIT
C SWIT

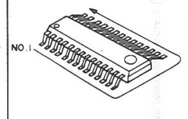

6
7
8
9
10
11
12
13
14
15
16
FM MPX VCO adj.
TP301
IC302
AN7472S
FM MPX
INPUT AMP
MPX
OUTPUT AMP
OUTPUT AMP
Separation adj.
38kHz cancel circuit adj.
Q304
2SC3311A
IF BAND SELECTOR
Q302
DTA114
SWITCHING
FM DET coil
T101
T105
Q120
2SC3311A
BUFFER AMP
Q119
2SC3311A
BUFFER AMP
FM/ST IF AMP
FM 2ND IF AMP
AM MIX
AM IF AMP
AGC
METER DRIVE
AM DET
SM MIX
DET
AMP
CF201
TP101
TP102
FM mono distortion adj.
AM IF adj.
TP201
Q115
2SC3311A
SIGNAL DETECTOR
Q113
Q114
FM signal strength level adj.
Q113,114
DTC144
SIGNAL DETECTOR
Q106
Q105
Q106, 107
DTA114
IF BAND SELECTOR
Q105
DTC144
IF BAND SELECTOR
IC902
XOUT
XIN
CE
CL
SI
NC
BO1
BO2
X901
D928
MA4062M
D919,921~923
MA165
Q908,909,911
DTC114YS
LED DRIVE
Q910
2SC3311A
LED DRIVE
D902~908, 915~918
MA165
IC901
M50941-421SP
MICRO COMPUTER
Q907
DTC144
SWITCHING
X902
(4MHz)
Q703
2SD592
REGULATOR
Q704
2SA1309A
REGULATOR
D924~926
LN031306PI
VR901
TUNING ENCODER
S911 CH9
S907 CH5
S903 CH1
S918 FM
S913 memo
S912 CH0
S908 CH6
S904 CH2
S919 MW
S914 mode
S920 IF band
S909 CH7
S905 CH3
S923 LW
S915 scan level
S916 CH down
S902 IF band
S910 CH8
S906 CH4
S922 T mode
S917 CH up
S901 auto-RF
J3
J4
J5
J6
B LED/OPERATION SWITCH CIRCUIT
C SWITCH CIRCUIT
D TUNING CIRCUIT
FL (SAD7MT83ZK)
REC LEVEL ON 4.8V
1kHz
KEY ON : 1V/2msec. div.
10V/2msec div.
10V/5 msec. div.


12
13
14
15
16
17
18
19
20
21
TP301
FM MPX VCO adj.
IC302
AN7472S
FM MPX
INPUT AMP
MPX
OUTPUT AMP
OUTPUT AMP
Separation adj.
38kHz cancel circuit adj.
Q304
2SC3311A
IF BAND SELECTOR
Q302
DTA114
SWITCHING
IC303
AN6554F
CLASS A.A. OUTPUT AMP
Q305
Q306
Q305,306
2SD1450
MUTING DRIVE
Q307
2SA1309A
MUTING DRIVE
L304 0.47μH
L305 0.47μH
R ch
L ch
OUTPUT
CONTROL INPUT
IC901
M50941-421SP
MICRO COMPUTER
VREF
NC
STEREO
TUNI NG1
RF BAND
IF BAND
REC
MONO
MUTE
TUNI NG0
SRDY
CLK
S OUT
S IN
T1
T2
INT1
INT2
Vss
RESET
XIN
XOUT
XC IN
XC OUT
Vcc
AVcc
X902 (4MHz)
Q907
DTC144
SWITCHING
Q703
2SD592
REGULATOR
Q704
2SA1309A
REGULATOR
Q116,118
2SC3311A
LED DRIVE
Q116
Q118
IC701
AN78M12
REGULATOR
J2
J1
T701
S701 (POWER)
standby
on
F1 T630mA
AC 240V---- [EK]
AC 220V---- [EB,EF,EW]
(50/60Hz)
E POWER SUPPLY CIRCUIT
F LED CIRCUIT
D122
LN01431HP
(quartz lock ind.)
FL (SAD7MT83ZK)
1kHz
17Vp-p
10V/2msec. div.
KEY ON : 1V/2msec. div.
10V/5msec. div.
REC LEVEL ON-4.8V
AMP
D DRIVE
C114YS
ODER

TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

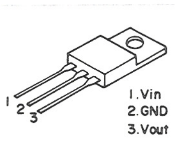


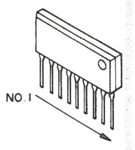
LM7001	16 Pin
AN6554F	14 Pin
M50941-421SP	64 Pin



AN7274NS	28 Pin
AN7472S	

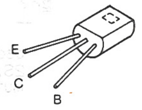
AN78M12


1
2
3
1.Vin
2.GND
3.Vout

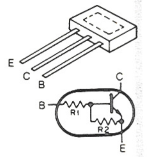


AN278	9 Pin

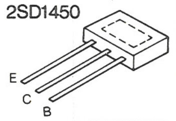
2SC1310,
2SD592ANCQ



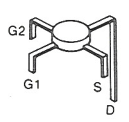
DTC144A


E
C
B
C
B
R1
R2
E

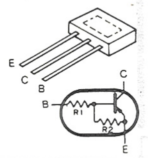
2SA1309A-S,
2SC2786M,
2SC3311A-Q,
2SD1450



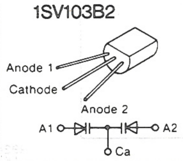
3SK74L1



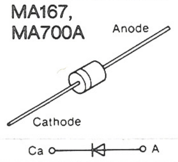
DTA114ESTP


E
C
B
C
B
R1
R2
E

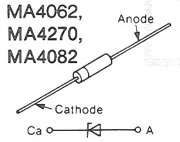
SVC342LMTP,
1SV103B2


Anode 1
Cathode
Anode 2
A1
A2
Ca

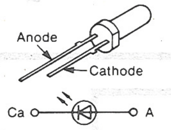
1SR35200, MA165,
MA167,
MA700A


Anode
Cathode
Ca
A

MA4030M,
MA4043M, MA4056,
MA4062,
MA4270,
MA4082

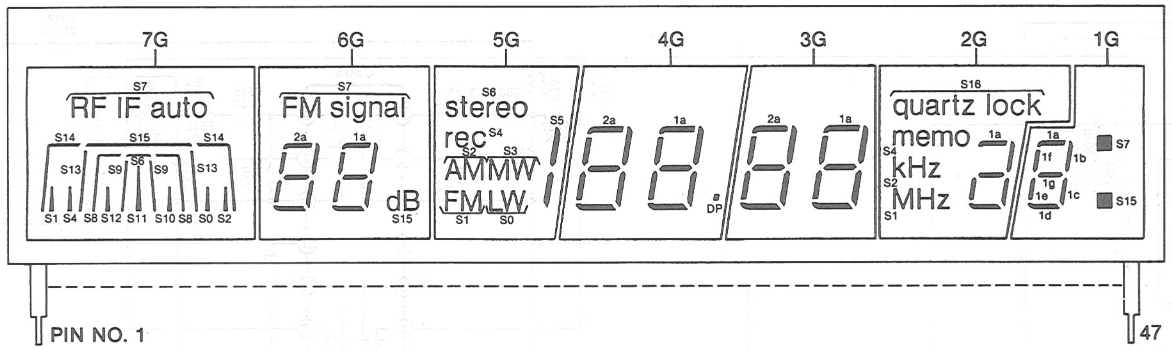

Anode
Cathode
Ca
A

LN014314P
LN031306P1


Anode
Cathode
Ca
A

DESCRIPTION OF FL PANEL

• GRID ASSIGNMENT

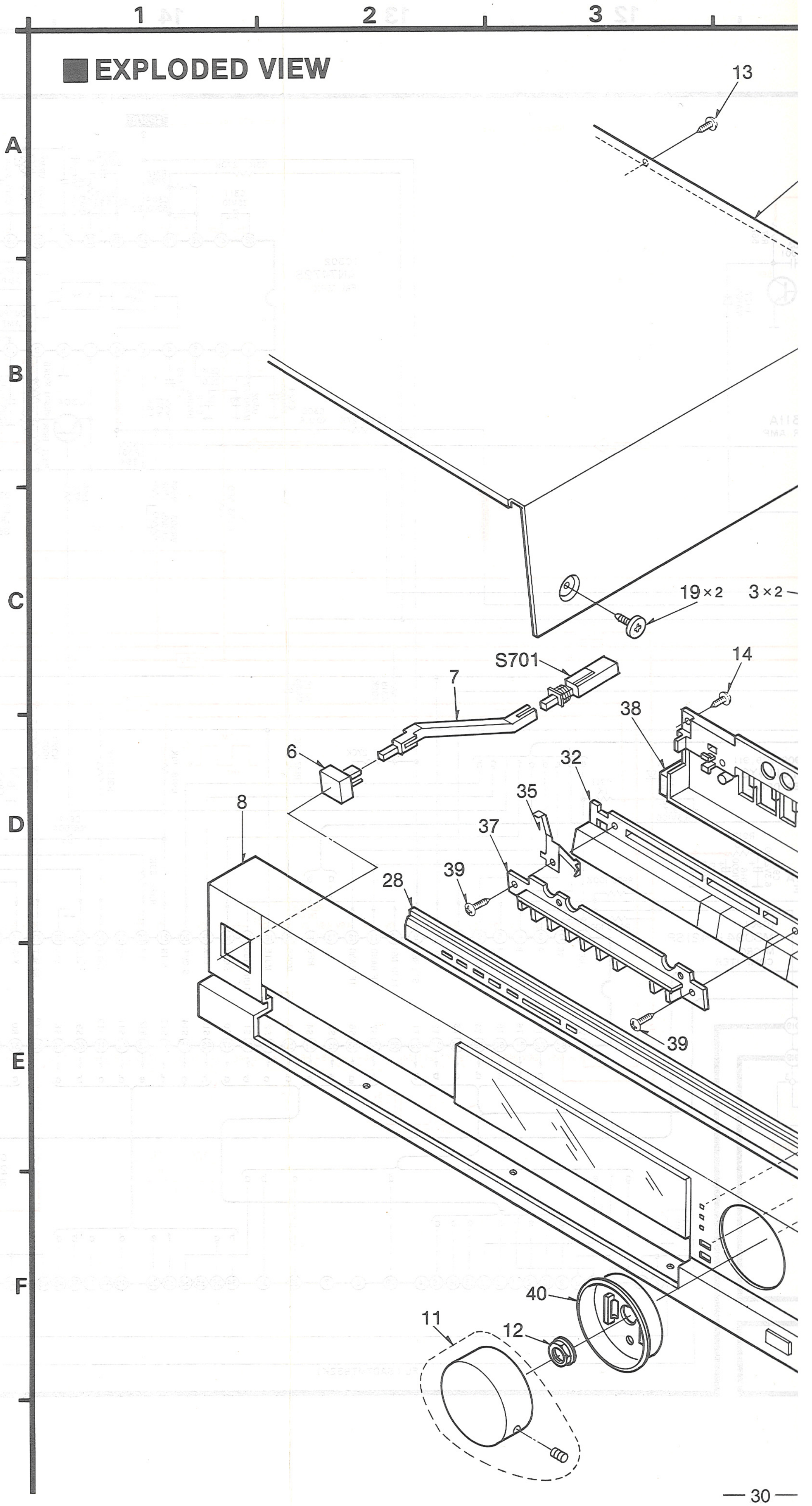

7G
6G
5G
4G
3G
2G
1G
S7
RF IF auto
S14
S15
S14
S13
S9
S6
S9
S13
S1
S4
S8
S12
S11
S10
S8
S0
S2
S7
FM signal
2a
1a
dB
S15
S6
stereo
rec
S4
S2
S3
AM
MW
FM
LW
S1
S0
S5
2a
1a
DP
2a
1a
S16
quartz lock
memo
1a
S4
kHz
S2
MHz
S1
1a
1f
1b
1g
1e
1c
1d
S7
S15
PIN NO. 1
47

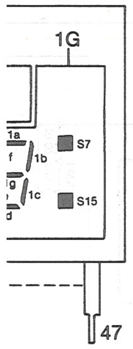
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
CONNECT-ION	NP	F1	NP	7G	S8	S9	S10	S11	S12	7G	S13	S14	6G	S15	NP	NP	6G	NP	NP	5G	NP	NP	NP	NP
PIN NO.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
CONNECT-ION	NP	NP	NP	NP	4G	S0	3G	S1	S2	3G	S3	S4	2G	S5	S6	2G	S16	1G	S7	1G	NP	F2	NP	

• ANODE ASSIGNMENT

	7G	6G	5G	4G	3G	2G	1G
S0	|	2d	LW	2d	2d	-	-
S1	|	2e	FM	2e	2e	MHz	-
S2	|	2c	AM	2c	2c	kHz	-
S3	-	2g	MW	2g	2g	-	-
S4	|	2f	rec	2f	2f	memo	-
S5	-	2b	/	2b	2b	-	-
S6	—	2a	stereo	2a	2a	-	-
S7	RF IF auto	FM signal	-	-	-	-	■
S8	/‾ ‾\	1d	-	1d	1d	1d	1d
S9	/ \	1e	-	1e	1e	1e	1e
S10	|	1c	-	1c	1c	1c	1c
S11	|	1g	-	1g	1g	1g	1g
S12	|	1f	-	1f	1f	-	1f
S13	/ \	1b	-	1b	1b	1b	1b
S14	/‾ ‾\	1a	-	1a	1a	1a	1a
S15	——	dB	-	DP	-	-	■
S16	-	-	-	-	-	quartz lock	-

EXPLODED VIEW

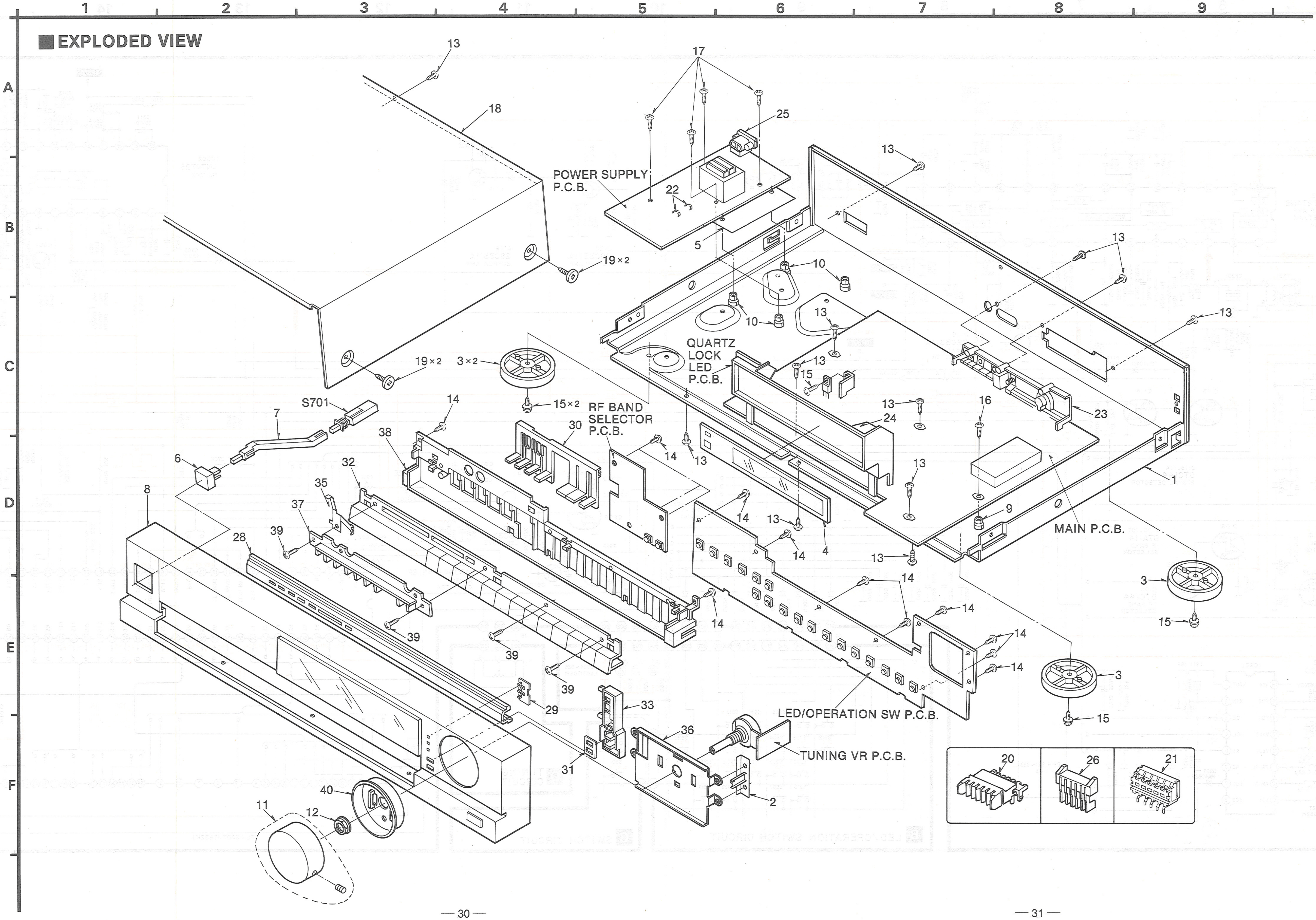

1
2
3
A
B
C
D
E
F
13
19×2
3×2
14
S701
7
6
8
38
32
35
37
39
28
39
40
11
12


1G
S7
1b
S15
1c
47

2	23	24
	N P	N P
6	47	
	N P	

1G
-
-
-
-
-
-
-
■
1d
1e
1c
1g
1f
1b
1a
■
-

■ EXPLODED VIEW


1
2
3
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6
7
8
9
A
B
C
D
E
F
13
18
17
25
POWER SUPPLY P.C.B.
22
5
13
19×2
10
10
13
13
13
19×2
3×2
QUARTZ LOCK LED P.C.B.
13
15
15×2
S701
7
14
RF BAND SELECTOR P.C.B.
30
38
14
13
13
24
16
23
13
1
6
32
35
8
37
39
28
14
13
14
4
9
MAIN P.C.B.
13
14
3
14
14
15
14
14
39
39
39
29
33
3
15
LED/OPERATION SW P.C.B.
36
TUNING VR P.C.B.
31
40
11
12
2
20
26
21

REPLACEMENT PARTS LIST

Notes : ＊Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
＊Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description
CABINET AND CHASSIS		
1 (EW)	SGPTG70L-KE	REAR PANEL
1 (EB, EF)	SGPTG70L-KF	REAR PANEL
1 (EK)	SGPTG70L-KK	REAR PANEL
2	SUS1007	COIL SPRING
3	SKL306	INSULATER
4 Ⓚ	SDU332-1B	FL FILTER
4 Ⓢ	SDU332-2B	FILTER
5	SMX1001	SHILD COVER
6 Ⓚ	SBC666-5	BUTTON
6 Ⓢ	SBC666	BUTTON, POWER
7	SUB183	ROD
8 Ⓚ	SGWTG70L-KE	FRONT PANEL
8 Ⓢ	SGWTG70L-SE	FRONT PANEL
9	SHE185-1	SPACER
10	SHE187-2	HOLDER
11 Ⓚ	SBN1237	KNOB
11 Ⓢ	SBN1237-1	KNOB
12	SNE4021	NUT
13	XTBS3+8JFZ1	SCREW
14	XTB3+8G	SCREW
15	XTW3+8T	SCREW
16	XTBS3+16F1	SCREW
17	XTBS3+20F1	SCREW
18 Ⓚ	SKCD511KE1	CABINET
18 Ⓢ	SKCD511SW1	CABINET
19 Ⓚ	SNE2129-1	SCREW
19 Ⓢ	SNE2129	SCREW
20	SJS50780WL	CONNECTOR(7P)
20	SJS50880WL	CONNECTOR(8P)
21	SJT30340LX-V	CONNECTOR(3P)
22	SJT390	FUSE HOLDER
23	SJF8615NP	TERMINAL BOARD
24	SGX7924	ORNAMENT
25 ⚠	SJS9236	AC INLET
26	SJT30747WL	CONNECTOR(7P)
26	SJT30847WL	CONNECTOR(8P)
28 Ⓚ	SGW610T03A	ORNAMENT
28 Ⓢ	SGW610S99A	ORNAMENT
29	SGL256	INDICATOR
30 Ⓚ	SBC959-2	BUTTON
30 Ⓢ	SBC959-3	BUTTON
31 Ⓢ	SHS6148	SPACER
32 Ⓚ	SBC1021A	ORNAMENT
32 Ⓢ	SBC1021-1A	ORNAMENT
33 Ⓚ	SBC1022	BUTTON
33 Ⓢ	SBC1022-1	BUTTON
35	SUS870	SPRING
36	SUW3113	HOLDER
37	SHR9844	PLASTIC SPACER
38 Ⓚ	SGX7925-1	BRACKET
38 Ⓢ	SGX7925-2	BRACKET
39	XTB3+10G	SCREW
40 Ⓚ	SGX7975	ORNAMENT
40 Ⓢ	SGX7975-1	ORNAMENT

Ref. No.	Part No.	Description
PACKING MATERIAL		
P1 Ⓚ (EW, EK, EB)	SPG6253	CARTON BOX
P1 Ⓚ (EF)	SPG6254	CARTON BOX
P1 Ⓢ (EW, EK, EB)	SPG6274	CARTON BOX
P1 Ⓢ (EF)	SPG6275	CARTON BOX
P2	SPSD69-2	PAD
P3	SPSD70-2	PAD
P4 Ⓚ	SPP735	PROTECTION COVER
P4 Ⓢ	XZB45X60A01	PROTECTION BAG
P5	XZB23X20C03	PROTECTION BAG
ACCESSORIES		
A1 ⚠ (EW, EF, EB)	SFDAC05E03	POWER CORD
A1 ⚠ (EK)	SFDAC05G02	POWER CORD
A2	SQF13199	INSTRUCTION MANUAL
A3	SJP2249-1	OUTPUT CORD
A4	SSA270M	FM ANTENNA
A5 ⚠ (EK)	SJP9009	PLUG
A6	SPB1162T	AM LOOP ANTENNA

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H880502900 YY/TN

ORDER NO. AD8804026C2-A

Tuner

ST-G70L

DEUTSCH

■ MESSUNGEN UND JUSTIERUNGEN

LW/MW/FM

Einstellungen der Bedienelemente und zu verwendende Geräte.

- MW und UKW Meßsender (MW und UKW Nebsender)
- Stereo-Modulator
- Verzerrungs-Analystator
- Elektronische Wechselstrom-und Gleichstrom-Voltmeter (EVM)
- Keramischer Kondensator (200 pF)
- Oszilloskop
- Frequenzzähler
- Drosselspule (100 µH)
- Widerstand (100 kΩ)

Anmerkung: Für **L251** (LW-Antennenspule) werdeven justiert Ersatzteil geliefert. Dien Kern dieses Teils daher nicht drehen.

MW-ZF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf **"MW"** Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **450 kHz** einstellen.
4. **T201** auf maximale Ausgangsleistung abgleichen.

MW-HF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung (1) gezeigt.
2. Stellen Sie die Einheit auf **"MW"** Betrieb.
3. Radio und Signalgenerator auf **522 kHz** einstellen.
4. **L204** so justieren, daß die in Signalzustand gemessene Spannung **1.0 V**.
5. Der Testaufbau ist in der Abbildung (2) gezeigt.
6. Radio und Signalgenerator auf **612 kHz** einstellen.
7. **L203** auf maximale Ausgangsleistung adgleichen.
8. Radio und Signalgenerator auf **1503 kHz** einstellen.
9. **CT201** auf maximale Ausgangsleistung abgleichen.
10. Die Schritte 6~9 wiederholen.

Anmerkung:

Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer werstärk-ungsregelung (AGC) sein.

LW-HF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "LW" Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **155 kHz** einstellen.
4. **L252** auf maximale Ausgangsleistung abgleichen.
5. Die Radiofrequenzanzeige und den Messender auf **353 kHz** einstellen.
6. **CT251** auf maximale Ausgangsleistung abgleichen.
7. Die Schritte 3~6 wiederholen.

Anmerkung:

Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer werstärk-ungsregelung (AGC) sein.

UKW-MONO-VERZERRUNGS-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf **"FM und RF normal"** Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100.10 MHz** einstellen.
4. Den Kern von **T101** so justieren, daß die im Signalzustand gemessene Spannung **0 mV** im 300 mV-Bereich beträgt.
5. **T105** so justieren, daß der Verzerrungsfaktor des linken Kanals minimal wird.
6. Schritte 4 und 5 einige Male wiederholen.
7. Versichern Sie sich, daß die Verzerrungsfaktoren von Kanal L und Kanal R annähernd gleich sind und auf ein Minimum gehalten sind.

Anmerkung:

Für die Justierung ist ein Schraubendreher aus Kunststoff zu verwenden.

UKW-HF-JUSTIERUNG

1. Testausrüstustung wie gezeigt anschließen.
2. Stellen Sie die Einheit auf “**FM und RF narrow**” Betrieb.
3. Radio und Signalgenerator auf **90.1 MHz** einstellen.
4. **L1, L2** und **L4** für maximalen Ausgang einstellen.
5. Radio und Signalgenerator auf **106.1 MHz** einstellen.
6. **CT1, CT2** und **CT3** für maximalen Ausgang einstellen.
7. Schritte 5 und 6 wiederholen.

MPX-SGO-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Den UKW-Bertriebsart-Wahlshalter in die “on/auto” Position stellen.
3. Radio und Meßsender auf **100.1 MHz** einstellen.
4. **VR302** auf **19 kHz ± 30 Hz** auf der Frequenzzähleranzeige justieren.

- **VERWENDUNG EINES ALTERNATIVSYSTEMS**

1. Stereosignal vom Meßsender eingeben oder eine Stereo-Sendung empfangen.
2. **VR302** justieren, bis die Stereo-Anzeige aufleuchtet. Den Arm von **VR302** mit Lack sichern, wie in der Abbildung gezeigt.

ABGLEICH DER UKW-STEREO-VERZERRUNG

1. Für den Anschluß des Prüfgerätes siehe die Abbildung.
2. Das Gerät auf “**FM und normal**” stellen.
3. Das Hochfrequenz-Anzeigegerät und den Signalgenerator auf **100,10 MHz** stellen.
4. **T1** so einstellen, daß der Verzerrungsfaktor des linken Kanals minimal wird.
5. Sicherstellen, daß die Verzerrungsfaktoren des linken und rechten Kanals nahezu übereinstimmen und beide minimal sind.
6. Das Gerät auf “**IF narrow**” stellen.
7. **T104** so einstellen, daß der Verzerrungsfaktor des linken Kanals minimal wird.
8. Sicherstellen, daß die Verzerrungsfaktoren des linken und rechten Kanals nahezu übereinstimmen und beide minimal sind.

Hinweis:

1. Der für den Abgleich verwendete Schraubendreher sollte aus Kunstharz hergestellt sein.
2. T1 sollte nicht mehr als 1/4 Drehung (90 Grad) nach einer Seite gedreht werden.
3. T104 sollte nicht mehr als 1/6 Drehung (60 Grad) nach einer Seite gedreht werden.

TRENNUNGS-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf “**FM und normal**” Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100,10 MHz** einstellen.
4. **VR303** so justieren, daß der R-Ausgang minimal ist, wenn der Stereomodulator im L-Betriebszustand (Linker Kanal moduliert) ist.
5. **VR304** so justieren, daß der L-Ausgang minimal ist, wenn der Stereomodulator im R-Betriebszustand (Linker Kanal moduliert) ist.

ABGLEICH DES UKW-SIGNALSTÄRKEPEGELS

1. Für den Anschluß des Prüfgerätes siehe die Abbildung.
2. Das Gerät auf “**FM und normal**” stellen.
3. Das Hochfrequenz-Anzeigegerät und den Signalgenerator auf **100,10 MHz** stellen.
4. Durch Drücken der UKW-Signaltaste das Flüssigkristalldisplay von “frequency” auf “dB” umschalten.
5. **VR103** so einstellen, daß **50 dB** angezeigt wird. “**50 dB**” wird auf dem Flüssigkristalldisplay angezeigt.
6. **VR102** so einstellen, daß **70 dB** angezeigt wird. “**70 dB**” wird auf dem Flüssigkristalldisplay angezeigt.
7. **VR101** so einstellen, daß **86 dB** angezeigt wird. “**86 dB**” wird auf dem Flüssigkristalldisplay angezeigt.
8. Die Schritte 5~7 wiederholen.

ABGLEICH DER UKW-ZF-SCHMAL-VERSTÄRKUNG

1. Für den Anschluß des Prüfgerätes siehe die Abbildung.
2. Das Gerät auf “**FM und normal**” stellen.
3. Durch Drücken der UKW-Signaltaste das Flüssigkristalldisplay von “frequency” auf “dB” umschalten.
4. Sicherstellen, daß “dB” angezeigt wird.
5. Das Gerät auf “**IF narrow**” stellen.
6. **VR105** so einstellen, daß die Werte für “dB” von “IF normal” und “IF narrow” miteinander übereinstimmen.

38-kHz-AUSBLENDKREISES-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf “**FM**” Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100,10 MHz** einstellen.
4. **VR303** auf minimal Ausgangsleistung abgleichen.

FRANÇAIS

MEAURAGES ET REGLAGES

LW/MW/M.F.

Positionnements des commandes et équipement utilisé

- Générateur de signaux AM et FM (AM et FM-SG)
- Modulateur stéréophonique
- Analyseur de distorsion
- Oscilloscope
- Compteur de fréquence
- Bobine d'amortissement d'arrêt (100μH)
- Résistance (100kΩ)
- Condensateur céramique (200pF)
- Voltmètre électronique à C.A. et C.C. (EVM)

Nota: Pour **L251** (bobine ANT LW) des éléments réglés sont fournis. Aussi, ne pas tourner les noyaux de ces pièces.

REGLAGE DE A.M.-F.I.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode **"MW"**.
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **450kHz**.
4. Régler **T201** pour une sortie maximale.

REGLAGE DE O.M.-H.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration (1).
2. Régler l'appareil sur le mode **"MW"**.
3. Régler le cadran radio et le générateur de signaux sur **522kHz**.
4. Ajuster **L204** de telle sorte que la tension mesurée sur le mode de signaux soit de **1.0V**.
5. Le raccordement de l'équipement d'essai est montré sur l'illustration (2).
6. Régler le cadran radio et le générateur de signaux sur **612kHz**.
7. Régler **L203** pour une sortie maximale.
8. Régler le cadran radio et le générateur de signaux sur **1503kHz**.
9. Régler **CT201** pour une sortie maximale.
10. Répéter les étapes 6~9.

Nota:

Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de again.

REGLAGE DE RE-LW

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode **"LW"**.
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **155kHz**.
4. Régler **L252** pour une sortie maximale.
5. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **353kHz**.
6. Régler **CT251** pour une sortie maximale.
7. Répéter les étapes 3~6.

Nota:

Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de again.

REGLAGE DE DISTORSION MONOPHONIQUE M.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode **"FM et RF normal"**.
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **100.10MHz**.
4. Régler le noyau de **T101** de telle sorte que la tension mesurée sur le mode de signaux soit de **0mV** dans une plage de 300mV.
5. Ajuster **T105** de telle que le facteur de sistorsion du canal de gauche soit minimisé.
6. Répéter les étapes 4 et 5 quelques fois.
7. S'assurer que les facteurs de distorsion du canal de gauche et du canal de droite soient sensiblement les mêmes et au minimum.

Nota:

Le tournevis de réglage utilisé devra ètre fait en résines.

REGLAGE DE F.M.-H.F.

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
2. Régler l'appareil sur le mode **"FM et RF narrow"**.
3. Régler le cadran radio et le générateur de signaux sur **90.1MHz**.
4. Régler **L1**, **L2** et **L4** pour obtenir une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur **106.1MHz**.
6. Régler **CT1**, **CT2** et **CT3** pour obtenir une sortie maximale.
7. Répéter la marche à suivre 5 et 6.

REGLAGE MULTIPLEX DE L'OSCILLATEUR COMMANDE PAR VARIATION DE TENSION

1. Le raccordement de l'équipement d'essai est montré sur la figure.
2. Régler l'appareil sur la position **"on/auto"**.
3. Régler le cadran radio et le générateur de signaux sur **100.1MHz**.
4. Ajuster **VR302** pour **19kHz±30Hz** sur le compteur de lecture de fréquences.

• EN UTILISANT UN SYSTEME ALTERNATIF

1. Applique un signal stéréo à partir du générateur ou recevoir une émission stéréo.
2. Ajuster **VR302** jusqu' à ce que l'indicateur stéréo séclaire. Coller le bras de **VR302** comme il montré sur la figure.

REGLAGE DE LA DISTORSION STERREO EN FM

1. Le raccordement des appareils de mesure est indiqué sur la figure.
2. Placer l'appareil en mode **"FM et normal"**.
3. Régler le générateur et le compteur sur **100,10MHz**.
4. Régler **T1** de sorte que le taux de distorsion dans la voie gauche (L) soit minimal.
5. Vérifier que les taux de distorsion dans les voies droite (D) et gauche (L) sont les mêmes et très voisins du minimum.
6. Placer l'appareil en mode **"FI étroite"**.
7. Régler **T104** de sorte que le taux de distorsion dans la voie gauche (L) soit minimal.
8. Vérifier que les taux de distorsion dans voies droite (D) et gauche (L) sont les mêmes et très voisins du minimum.

Notes:

1. Le tournevis utilisé doit être entièrement fabriqué dans une matière isolante.
2. T1 ne doit pas être tourné de plus de 90° (1/4 de tour) dans un sens comme dans l'autre.
3. T104 ne doit pas être tourné de plus de 60° (1/6 de tour) dans un sens comme dans l'autre.

REGLAGE DE SEPARATION

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode **"FM et normal"**.
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **100,10MHz**.
4. Ajuster **VR303** de telle sorte que la sortie de droite soite minimisée lorsque le modulateur stéréo est sur le mode "G". (modulation de canal de gauche.)
5. Ajuster **VR304** de telle sorte que la sortie de droite soite minimisée lorsque le modulateur stéréo est sur le mode "G". (modulation de canal de gauche.)

REGLAGE DU NIVEAU DU SIGNAL FM

1. Le raccordement des appareils de mesure est indiqué sur la figure.
2. Placer l'appareil en mode **"FM et normal"**.
3. Régler le générateur et le compteur sur **100,10MHz**.
4. Changer l'indication de l'affichage à cristaux liquides de "fréquence" à "dB" en appuyant sur le bouton FM.
5. Régler **VR103** de manière que l'indication **"50dB"** soit indiquée sur l'affichage.
6. Régler **VR102** de manière que l'indication **"70dB"** soit indiquée sur l'affichage.
7. Régler **VR101** de manière que l'indication **"86dB"** soit indiquée sur l'affichage.
8. Répéter les opérations 5 à 7.

REGLAGE DU GAIN EN FM POUR LA BANDE PASSANTE FI ETROITE

1. Le raccordement des appareils de mesure est indiqué sur la figure.
2. Placer l'appareil en mode **"FM et normal"**.
3. Changer l'indication de l'affichage à cristaux liquides de "fréquence" à "dB" en appuyant sur le bouton FM.
4. Vérifier que l'indication "dB" est bien fournie.
5. Placer l'appareil en mode **"FI étroite"**.
6. Régler **VR105** de manière que les valeurs en dB pour "FI normale" et "FI étroite" soient identiques.

REGLAGE DU CIRCUIT DE SUPPRESSION 38kHz

1. Leraccordment de l'équipement d'essai est montré sur la figure.
2. Régler l'appareil sur le mode **"FM"**.
3. Ajuster le réglage de l'affichage de radioféquence et du générateur de signaux sur **100,10MHz**.
4. Ajuster **VR303** pour une sortie minimum.

ESPAÑOL

MEDICIONES Y AJUSTES

LW/MW/FM

Posiciones de control y equipo usado.

- Generador de señales de AM y FM (AM y FM-SG)
- Voltimetro electrónico de CA y CC (EVM)
- Analizador de distorsiones
- Osciloscopio
- Frecuencimetro
- Frecuencimetro
- Bobina de choque (100µH)
- Resistor (100kΩ)
- Condensador cerámico (200pF)

Nota: Para **L251** (bobina antena LO) son suministradas piezas ajustadas. Por lo tanto, no gire los núcleos de estas piezas.

AJUSTE DE MW-IF

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "**MW**".
3. Ajustar la puesta de la presentación de radiofrecuencia y generador de señales a **450kHz**.
4. Ajustar **T201** para salada máxima.

AJUSTE DE MW-RF

1. La conexión del equipo de pruebas se muestra en la figura (1).
2. Poner la unidad en modalidad de "**MW**".
3. Poner la presentación de la radio y el generador de señales en **522kHz**.
4. Ajustar **L204** de manera que el voltaje medido en modalidad de señal sea **1.0V**.
5. La conexión del equipo de pruebas se muestra en la figura.
6. Poner la presentación de la radio y el generador de señales en **612kHz**.
7. Ajustar **L203** para salida máxima.
8. Poner la presentación de la radio y el generador de señales en **1503kHz**.
9. Ajustar **CT201** para salida máxima.
10. Repita los pasos 6. al 9.

Nota:

El nivel de entrada de antena ha de ser lo más bajo posible estando libre de AGC (control automático de ganancia).

AJUSTE DE LO-RF

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "**LW**".
3. Poner la puesta de la presentación de radiofrecuenciay generador de señales a **155kHz**.
4. Ajustar **L252** para salida máxima.
5. Poner la puesta de la presentación de radiofrecuenciay generador de señales a **353kHz**.
6. Ajustar **CT251** para salida máxima.
7. Repitir los pasos 3. al 6.

Nota:

El nivel de entrada de antena ha de ser lo más bajo posible estando libre de AGC (control automático de ganancia).

AJUSTE DE DISTORSION MONO FM

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "**FM y RF normal**".
3. Poner la puesta de la presentación de radiofrecuencia y generador de señales a **100,10MHz**.
4. Ajustar el núcleo de **T101** de manera que el voltaje medido en modalidad de señal sea **0mV**.
5. Ajustar **T105** de manera que el factor de distorsión de CH-I se minimice.
6. Repetir los pasos 4 y 5 algunas veces.
7. Asegurarse de que los factores de distorsión de CH-I y CH-D sean casi los mismos y los minimos.

Nota:

El destornillador de ajuste usado debe estar hecho de resina.

AJUSTE DE FM-RF

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "**FM y RF narrow**".
3. Poner la presentación de la radio y el generador de señales en **90.1MHz**.
4. Ajustar **L1, L2** y **L4** para salida máxima.
5. Poner la presentación de la radio y el generador de señales en **106.1MHz**.
6. Ajustar **CT1, CT2** y **CT3** para salida máxima.
7. Repetir los pasos 5 y 6.

AJUSTE DE MPX VCO (OSCILADOR CONTROLADO POR VOLTAJE MPX)

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en la posición de "**on/auto**".
3. Poner la presentación de la radio y la puesta del generador de señales en **100.1MHz**.
4. Ajustar **VR302** para **19kHz±30Hz** en lectura de frecuencimetro.

- **USANDO SYSTEMA ALTERNATIVO**

1. Aplicar señal estereofónica del generador o recibir la emisión estereofónica.
2. Ajustar **VR302** hasta que la presentacón de estéro se encienda. Fijar el brazo de **VR302** como se muestra en la figura.

AJUSTE DE LA DISTORSION DEL ESTEREO FM

1. La conexión del equipo de prueba se muestra en la figura.
2. Ponga la unidad en la modalidad "**FM y normal**".
3. Ponga el visualizador de radiofrecuencia y el generador de señales en **100,10MHz**.
4. Ajuste **T1** de modo que el factor de distorsión de L-CH se haga minimo.
5. Asegúrese de que los factores de distorsión de L-CH y R-CH sean similares entre si en el minimo.
6. Ponga la unidad en la modalidad "**SI estrecha**".
7. Ajuste **T104** de modo que el factor de distorsión de L-CH se haga minimo.
8. Asegúrese de que los factores de distorsión de L-CH sean similares entre si en el minimo.

Notas:

1. Debe utilizarse un destornillador de resina para realizar los ajustes.
2. T1 debe girarse como máximo 1/4 de vuelta (90 grados) en cada sentido.
3. T104 debe girarse como máximo 1/6 de vuelta (60 grados) en cada sentido.

AJUSTE DE SEPARACION

1. La conexión del equipo pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "**FM y normal**".
3. Ajustar la puesta de la presentación de radiofrecuencia y generador de señales a **100,10MHz**.
4. Ajustar **VR303** de manera que la salida de D quede minimizada cuando el modulador de estéreo esté en la modalidad "**I**". (modulación de CH-I.)
5. Ajustar **VR304** de manera que la salida de D quede minimizada cuando el modulador de estéreo esté en la modalidad "**I**". (modulación de CH-I.)

NIVEL DE AJUSTE DE LA INTENSIDAD DE LA SEÃL DE FM

1. La conexión del equipo de prueba se muestra en la figura.
2. Ponga la unidad en la modalidad "**FM y normal**".
3. Ponga el visualizador de radiofrecuencia y el generador de señales en **100,10MHz**.
4. Cambie el visualizador de cristal liquido de "frecuencia" a "dB" pulsando el botón de la señal FM.
5. Ajuste **VR103** de modo que se indique **50dB**. En el visualizador de cristal liquido se indica "**50dB**".
6. Ajuste **VR102** de modo que se indique **70dB**. En el visualizador de cristal liquido se indica "**70dB**".
7. Ajuste **VR101** de modo que se indique **86dB**. En el visualizador de cristal liquido se indica "**86dB**".
8. Repita los pasos: 5~7.

AJUSTE DE LA GANANCIA DE FM "SI ESTRECHA"

1. La conexión del equipo de prueba se muestra en la figura.
2. Ponga la unidad en la modalidad "**FM y normal**".
3. Cambie el visualizador de cristal liquido de "frecuencia" a "dB" pulsando el botón de la señal FM.
4. Verifique que se indique "dB".
5. Ponga la unidad en la modalidad "**SI estrecha**".
6. Ajuste **VR105** de modo que los "dB" de "SI normal" y "SI estrecha" sean iguales entre si.

AJUSTE DE CIRCUITO DE CANCELACION, 38kHz

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "**FM**".
3. Ponga el visualizador de radiofrecuencia y el generador de señales en **100,10MHz**.
4. Ajustar **VR303** para salida minimos.

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